K.L.N. COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)

(Accredited by NAAC for 5 Years W.e.f November 2018)

(An ISO 9001:2015 Certified Institution)

Pottapalayam -630612,Sivagangai District,Tamilnadu

(11km From Madurai City)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

(Permanently Affliated to Anna University,Chennai)

(Research Centre of Anna University,Chennai)

(Accredited by NBA up to 30.06.2022)

FOR II YEAR

ELECTRICAL AND ELECTRONICS ENGINEERING

STUDENTS HAND BOOK

Anna University, Chennai

Regulation - 2017

(Academic Year 2019-2020)

K.L.N. COLLEGE OF ENGINEERING

Department of Electrical and Electronics Engineering

STUDENTS HAND BOOK

B.E. – EEE – Third– Semester – Odd Semester of 2019 – 2020

This book contains the following:

VISION AND MISSION OF THE COLLEGE

VISION

To become a Premier Institute of National Repute by Providing Quality Education, Successful Graduation, Potential Employability and Advanced Research & Development through Academic Excellence.

MISSION

To Develop and Make Students Competent Professional in the Dynamic Environment in the field of Engineering, Technology and Management by emphasizing Research, Social Concern and Ethical Values through Quality Education System.

VISION AND MISSION OF THE EEE DEPARTMENT

VISION

To become a high standard of excellence in Education, Training and Research in the field of Electrical & Electronics Engineering and allied applications.

MISSION

To produce excellent, innovative and Nationalistic Engineers with Ethical Values and to advance in the field of Electrical & Electronics Engineering and allied areas.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The Educational Objectives of the Electrical and Electronics Engineering (EEE) Program represent major accomplishments that we expect our graduates to achieve after three to five years of graduation. More specifically our graduates are expected:

PEO1: to excel in industrial or graduate work in Electrical and Electronics Engineering and allied fields

PEO2: to practice their Professions conforming to Ethical Values and Environmentally friendly policies

PEO3: to work in international and multi-disciplinary Environments

PEO4: to successfully adapt to evolving Technologies and stay current with their Professions

PROGRAM SPECIFIC OUTCOMES (PSOs)

Electrical and Electronics Engineering Graduates will be able to:

PSO1: Apply the fundamentals of mathematics, science and engineering knowledge to identify, formulate, design and investigate complex engineering problems of electric circuits, analog and digital electronic circuits, electrical machines and power systems.

PSO2: Apply appropriate techniques and modern Engineering hardware and software tools in power systems to engage in life- long learning and to successfully adapt in multi disciplinary environments.

PROGRAM OUTCOMES (POs)

Electrical and Electronics Engineering Graduates will be able to:

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the `consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

OUTCOME BASED EDUCATION (OBE)

In a traditional education system, students are given grades and rankings compared to each other. Content and performance expectations are based primarily on what was taught in the past to students of a given age. The goal of traditional education was to present the knowledge and skills of an older generation to the new generation of students, and to provide students with an environment in which to learn. The process paid little attention (beyond the classroom teacher) to whether or not students learn any of the material.

An outcome is a culminating demonstration of learning; it is what the student should be able to do, at the end of a course/program, in-terms of the knowledge, skill and behavior.

Outcome-based education is an approach to education in which decisions about the curriculum are driven by the exit learning outcomes that the students should display at the end of the course. In outcome-based education, product defines process. Outcome-based education can be summed up as results-oriented thinking and is the opposite of input-based education where the emphasis is on the educational process. Outcome-based education promotes fitness for practice and education for capability.

BENEFITS AND SIGNIFICANCE OF ACCREDITATION

The process of accreditation helps in realizing a number of benefits, such as:

- Helps the Institution to know its strengths, weaknesses and opportunities
- Initiates Institutions into innovative and modern methods of pedagogy
- Gives Institutions a new sense of direction and identity
- Provides society with reliable information on quality of education offered
- Promotes intra and inter-Institutional interactions

Accreditation signifies different things to different stakeholders. These are:

Benefits to Institutions

Accreditation is market-driven and has an international focus. It assesses the characteristics of an Institution and its programme against a set of criteria established by National Board of Accreditation. NBA's key objective is to contribute to the significant improvement of the Institutions involved in the accreditation process. Accreditation process quantifies the strengths, weaknesses in the processes adopted by the Institution and provides directions and opportunities for future growth. NBA provides a quality seal or label that differentiates the Institutions from its peers at the national level. This leads to a widespread recognition and greater appreciation of the brand name of Institutions and motivates the Institutions to strive for more.

Benefits to Students

Students studying in NBA accredited Institutions can be assured that they will receive education which is a balance between high academic quality and professional relevance and that the needs of the corporate world are well integrated into programs, activities and processes. It signifies that he has entered the portals of an Institution, which has the essential and desirable features of quality professional education.

Benefits to Employers

Accreditation assures prospective employers that students come from a programme where the content and quality have been evaluated, satisfying established standards. It also signifies that the students passing out have acquired competence based on well established technical inputs.

Benefits to the Public

Accredited status represents the commitment of the programme and the Institution to quality and continuous improvement.

Catalyst for International Accreditations

Due to accreditation from NBA, the Institution's systems and procedures get aligned with the Institution's Mission and Vision. All essential prerequisites for international accreditation are included in the accreditation process of NBA. Therefore, NBA acts as a catalyst for the Institutions planning to acquire International Accreditation.

Benefits to Industry and Infrastructure Providers

It signifies identification of quality of Institutional capabilities, skills and knowledge.

Benefits to Parents

It signifies that their ward goes through a teaching-learning environment as per accepted good practices.

Benefits to Alumni

It reassures alumni that alumni are products of an institute with a higher standing in terms of learning.

Benefits to Country

Accreditation helps in gaining confidence of stakeholders and in giving a strong message that as a country, our technical manpower is of international standards and can be very useful in enhancing the global mobility for our technical manpower.

ENGINEERING ETHICS

Engineering Ethics is the set of rules and guidelines that engineers adhere to as a moral obligation to their profession and to the world. Engineering is a professional career that impact lives. When ethics is not followed, disaster often occurs; these disasters not only include huge monetary costs and environmental impacts, but also often result in the loss of human life. Engineering Ethics applies to every engineer and is very important.

The National Society of Professional Engineers (NSPE) decides the overall standards and codes of ethics for all the engineering professions. The Preamble of the NSPE *Code of Conduct for Engineers* (2007) states: "*Engineers shall at all times recognize that their primary obligation is to protect the safety, health, property, and welfare of the public. If their professional judgment is overruled under circumstances where the safety, health, property, or welfare of the public are endangered, they shall notify their employer or client and such other authority as may be appropriate.*"

Electrical Engineering Ethics

Electrical Engineering is a type of engineering profession that deals with the creation of better electronics. Since our society is heading towards an era of technology, where all members of society will be affected, it is especially important for electrical engineers to follow a code of engineering ethics. For electrical engineers, an important set of guidelines is the *Electrical Engineering Code of Ethics*, published by IEEE.

IEEE code of Ethics

We, the members of the IEEE, in recognition of the importance of our technologies in affecting the quality of life throughout the world, and in accepting a personal obligation to our profession, its members and the communities we serve, do hereby commit ourselves to the highest ethical and professional conduct and agree:

1. to accept responsibility in making decisions consistent with the safety, health, and welfare of the public, and to disclose promptly factors that might endanger the public or the environment;
2. to avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist;
3. to be honest and realistic in stating claims or estimates based on available data;
4. to reject bribery in all its forms;
5. to improve the understanding of technology; its appropriate application, and potential consequences;
6. to maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations;

7. to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others;
8. to treat fairly all persons and to not engage in acts of discrimination based on race, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression;
9. to avoid injuring others, their property, reputation, or employment by false or malicious action;
10. to assist colleagues and co-workers in their professional development and to support them in following this code of ethics.

Engineering Ethics in College/Education

The main engineering ethics problem that college students are face with is academic integrity. Academic integrity can show itself in the form of cheating by copying someone's work, intentional cheating, plagiarism, and/or self-plagiarism.

However, professional ethics is something that can be learned even when it conflicts with personal ethics, as for example, a situation where you are personally okay with building a product that can harm the environment, yet save lives. You can learn professional ethics and realize that something that is harmful to the environment is not okay. Ethics codes can even help you see the bigger picture. For example, in the previous scenario, these codes can help you re-evaluate your ethics and realize that something that is harmful to the environment will eventually be harmful to the people around you and yourself.

Engineering Ethics in the Professional World

In the professional world, ethical engineering problems come up in many cases. One of these includes the case of a professional using someone else's work that is published in the widespread market of publication. Another is the case of a professional using someone else's work that is not published yet and stealing their idea. Engineers who have good engineering ethics often have a good sense of the value of life. They don't hesitate to admit that they made a mistake because they know that the cost of not owning up to your mistakes can have disastrous consequences. It might even cost a human life.

Engineering Ethics in Companies

Not only do individual engineers have to be conscious of engineering ethics, but also companies. Companies have to be aware of their Corporate Social Responsibility and Environmental Responsibility. Corporate Social Responsibility is a company's responsibility to give back to the community that they profit from and to behave ethically so that both they and their community can benefit. Environmental Responsibility is a business's initiative to leave the environment (where it is taking its resources from) the same, if not better, that it is found it.

BLOOM'S TAXONOMY

Definitions of the different levels of thinking skills in Bloom's taxonomy

1. **Remember** – recalling relevant terminology, specific facts, or different procedures related to information and/or course topics. At this level, a student can remember something, but may not really understand it.
2. **Understand** – the ability to grasp the meaning of information (facts, definitions, concepts, etc.) that has been presented.
3. **Apply** – being able to use previously learned information in different situations or in problem solving.
4. **Analyze** – the ability to break information down into its component parts. Analysis also refers to the process of examining information in order to make conclusions regarding cause and effect, interpreting motives, making inferences, or finding evidence to support statements/arguments.
5. **Evaluate** – being able to judge the value of information and/or sources of information based on personal values or opinions.
6. **Create** – the ability to creatively or uniquely apply prior knowledge and/or skills to produce new and original thoughts, ideas, processes, etc. At this level, students are involved in creating their own thoughts an ideas.

List of Action Words Related to Critical Thinking Skills

REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE
Count	Associate	Add	Analyze	Appraise	Categorize
Define	Compute	Apply	Arrange	Assess	Combine
Describe	Convert	Calculate	Breakdown	Compare	Compile
Draw	Defend	Change	Combine	Conclude	Compose
Identify	Discuss	Classify	Design	Contrast	Create
Label	Distinguish	Complete	Detect	Criticize	Drive
List	Estimate	Compute	Develop	Critique	Design
Match	Explain	Demonstrate	Diagram	Determine	Devise
Name	Extend	Discover	Differentiate	Grade	Explain
Outline	Extrapolate	Divide	Discriminate	Interpret	Generate
Point	Generalize	Examine	Illustrate	Judge	Group
Quote	Give	Graph	Infer	Justify	Integrate
Read	examples	Interpolate	Outline	Measure	Modify
Recall	Infer	Manipulate	Point out	Rank	Order
Recite	Paraphrase	Modify	Relate	Rate	Organize
Recognize	Predict	Operate	Select	Support	Plan
Record	Rewrite	Prepare	Separate	Test	Prescribe
Repeat	Summarize	Produce	Subdivide		Propose
Reproduce		Show	Utilize		Rearrange
Select		Solve			Reconstruct
State Write		Subtract			Related
		Translate			Reorganize
		Use			Revise
					Rewrite
					Summarize
					Transform
					Specify

K.L.N. COLLEGE OF ENGINEERING, POTTAPALAYAM - 630 612

ACADEMIC CALENDAR - ODD Semester of 2019 – 2020

Third Semester - B.E./B.Tech Courses

K.L.N. COLLEGE OF ENGINEERING – 630 612
ACADEMIC CALENDAR - ODD Semester of 2019-2020
III, V, VII SEMESTER UG & PG COURSES – (as on 19.06.2019)

June 2019		July 2019	
1. Sat		1. Mon(9)	Commencement of Classes- III & V Semester M.E.,MBA &MCA Courses
2. Sun		2. Tues (10)	Project awareness and guidance meeting for students (2-5 July 2019).
3. Mon		3. Wed (11)	
4. Tues		4. Thurs (12)	
5. Wed	***Ramzan – Holiday***	5. Fri (13)	NBA-CO attainment-Odd semester of 2018-2019-Last date for submission.
6. Thur		6. Sat	
7. Fri		7. Sun	
8. Sat		8. Mon(14)	
9. Sun		9. Tue (15)	End Date – Unit – I (UG)
10. Mon		10. Wed (16)	Class Test-I- UG (10^{th} – 17^{th} July 2019)
11. Tues		11. Thurs(17)	
12. Wed		12. Fri (18)	Attendance Shortage Review – I
13. Thurs		13. Sat	Academic Performance evaluation of faculty-Phase-I-Review - Grievance Redressal Committee Meeting -IIPC & IDCA review meeting-I - Training, Arrear&Remedial coaching classes- Phase – I
14. Fri		14. Sun	
15. Sat		15. Mon (19)	
16. Sun		16. Tues (20)	
17. Mon	Display of time table UG / PG Faculty Meeting – I, Roles and responsibilities Plan of academic activities-staff/students- Schedule of Administrative commitee meeting for NBA, Course Committee Meeting – I Conduct of Bridge course / Value Added course (17^{th} -28^{th} June 2019)	17. Wed (21)	
18. Tues	Program Assessment Committee Meeting – Schedule of Content Beyond Syllabus-plan	18. Thurs (22)	End Date – Unit – I (PG)
19. Wed(1)	Commencement of Classes- III,V&VII Semester B.E./B.Tech Courses Class Committee Meeting – I (19^{th} – 25^{th} June 2019)	19. Fri(23)	Class Test-I PG(19^{th} – 26^{th} July 2019)
20. Thurs(2)		20.Sat	
21. Fri(3)	Last date for uploading course material (T/P), Lecture schedule in the college website.	21.Sun	
22. Sat		22.Mon(24)	
23. Sun		23. Tue (25)	
24. Mon(4)		24. Wed (26)	
25. Tues(5)		25. Thurs (27)	
26. Wed(6)	Student Counselor Meeting – I –	26. Fri (28)	
27. Thurs(7)		27. Sat	Anti-Ragging Committee Meeting Program Assessment Committee meeting-PO-Assessment-2015-2019 Batch-Planning for DAC meeting-Faculty Meeting-II Training, Arrear&Remedial coaching classes-Phase – II
28. Fri(8)	Last date for updating of Change of address / Phone no. in the dept. & college Office: 28^{th} June 2019 – collection of Aadhar Number, Passport size photograph and uploading in the AU web portal.	28. Sun	
29. Sat		29. Mon(29)	Final Year Project Last date for the submission of selection of project guide End Date – Unit – II (UG)
30.Sun		30. Tues(30)	CIT–I–(UG) 30^{th} July- 6^{th} August 2019
		31. Wed (31)	

19/6/2019

August 2019		September 2019	
1. Thurs (32)	Commencement of Classes – First semester B.E / B.Tech-Tentative	1.Sun	
2.Fri (33)	Attendance Shortage – Review – II	2. Mon	***Vinayagar Chathurthi – Holiday***
3.Sat		3. Tues (51)	
4.Sun		4.Wed (52)	
5.Mon(34)		5.Thurs(53)	Teacher's Day
6. Tues (35)	End Date – Unit – II (PG)	6. Fri (54)	
7. Wed (36)	CIT – I – (PG) 7th – 16th August 2019	7. Sat	
8. Thurs (37)		8. Sun	
9.Fri (38)		9. Mon (55)	
10.Sat	National Level Technical Symposium – Mechanical Training, Arrear &Remedial coaching classes-Phase – III	10. Tues	***Moharam - Holiday***
11.Sun		11. Wed (56)	
12.Mon	***Bakrid – Holiday***	12. Thurs (57)	
13.Tues(39)		13. Fri (58)	End Date – Unit – IV (UG)
14. Wed(40)		14. Sat	Faculty Meeting – III Attendance Shortage – Review – III Training, Arrear &Remedial coaching classes-Phase –V
15.Thurs	***Independence Day – Holiday***	15. Sun	Engineers Day
16.Fri (41)		16. Mon (59)	CIT – II– (UG) 16th – 23rd Sep 2019
17. Sat		17. Tues (60)	Last date for the finalization of Elective Subjects to be offered in the even semester of 2019 – 2020.
18.Sun		18. Wed (61)	End Date – Unit – IV (PG)
19.Mon(42)	Class Committee Meeting – II – 19th –22nd Aug 2019	19. Thurs (62)	CIT– II– (PG) 19th – 26th Sep 2019
20.Tues (43)		20. Fri (63)	**Last date for the Payment of Anna University Examinations fees – November/December 2019**
21.Wed (44)		21. Sat	
22. Thurs (45)	Student Counselor Meeting – II	22. Sun	
23.Fri	***Krishna Jeyanthi – Holiday***	23. Mon (64)	
24. Sat	Training, Arrear & Remedial coaching classes-Phase – IV Parents – Teachers Meeting	24. Tues (65)	
25.Sun		25. Wed (66)	
26. Mon(46)	Class Test-II-(UG) 26th August- 3rd September 2019	26. Thurs (67)	
27. Tues (47)		27. Fri (68)	Model Practical Examinations 27th Sep- 4th Oct 2019
28. Wed (48)	End Date – Unit – III (PG)	28. Sat	Training, Arrear &Remedial coaching classes-Phase VI
29. Thurs (49)	Class Test-II-(PG) 29th Aug -6th September 2019	29. Sun	
30. Fri (50)		30.Mon (69)	
31.Sat			

19/6/2019

October 2019		November 2019	
1.Tues(70)		1.Fri (90)	
2. Wed	***Gandhi Jeyanthi & Holiday***	2. Sat	
3.Thurs (71)	Students feedback on faculty, college Facility, Course Outcome Survey.	3.Sun	
4.Fri (72)	End Date – Unit – V (UG) Class Committee Meeting – III	4.Mon (91)	Winter vacation-Phase-I- (4th Nov 2019-1st Dec 2019)
5.Sat		5.Tues (92)	
6. Sun		6. Wed (93)	Commencement of end semester Exams - III,V&VII Semester UG & PG
7.Mon	***Saraswati Pooja / Ayutha Pooja- Holiday***	7.Thurs (94)	
8.Tues	***Vijaya Thasami – Holiday***	8.Fri (95)	
9. Wed (73)	Class Test – III (UG) 9th – 11th Oct 2019	9. Sat	
10.Thurs (74)	End Date – Unit – V (PG)	10.Sun	***Miladi Nabi-Holiday***
11.Fri (75)	Class Test- III (PG) 11th -18th October 2019	11.Mon (96)	
12.Sat	Faculty Meeting – IV- Instructions regarding conduct of practical examinations –Theory examination question paper discrepancy reporting& follow up of students.	12.Tues (97)	
13. Sun		13. Wed (98)	
14.Mon (76)	Model Theory Examinations - UG 14th – 19th Oct 2019	14.Thurs (99)	
15.Tues (77)		15.Fri (100)	
16. Wed (78)		16. Sat	
17.Thurs (79)		17.Sun	
18.Fri (80)		18.Mon (101)	
19.Sat	Last working Day- III,V&VII Semester UG&PG	19.Tues (102)	
20.Sun		20.Wed (103)	
21. Mon (81)	Commencement of Anna University Practical Examinations – (UG & PG)	21. Thurs (104)	
22.Tues (82)		22.Fri (105)	
23.Wed (83)		23.Sat	
24.Thurs (84)		24.Sun	
25.Fri (85)		25.Mon (106)	
26. Sat		26. Tue (107)	
27. Sun	***Deepavali – Holiday***	27.Wed (108)	
28. Mon (86)		28. Thurs (109)	
29. Tues (87)		29.Fri (110)	
30.Wed (88)		30.Sat	
31.Thurs(89)			

Reopening day for the staff after Winter Vacation: 02.12.2019 (Monday)
Bridge course for even semester courses/Value added courses: 2nd -6th Dec 2019.
Reopening day for the Even semester of 2019 – 2020: 09.12.2019 (Monday)

19/6/2019

K.L.N. COLLEGE OF ENGINEERING, POTTAPALAYAM – 630612.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CLASS WISE TIME TABLE – 2019-2020 (ODD SEMESTER)

With effect from : 1.7.2019

Year/Sem : II / III Class Room: EE03 Faculty In-charge : M.JEYAMURUGAN **Staff Code : 10230019**

TIME→ DAY↓	**09.00 – 09.50**	**09.50 – 10.40**	**10.55 - 11.45**	**11.45 - 12.35**	**12.35 - 01.10**	**01.10 - 01.55**	**01.55 - 02.40**	**02.50 - 03.35**	**03.35 - 04.20**
PERIOD→	**I**	**II**	**III**	**IV**		**V**	**VI**	**VII**	**VI II**
MON	**TPDE** VA	**EDC** MJM	**PPE** CVR	**EM-I** PLT/SMK	***L***	**DLC** RJPP	**EMT** AM	**EDC** MJM	**EM-I/EMT** PLT/AM
TUE	**EM-I** PLT/SMK	**DLC** RJPP	**TPDE** VA	**EMT(T)** AM,TG	***U***	**EM-I LAB /** PLT, CVR *[Venue: EM LAB]* /		**E LAB** MJM, AM *[Venue: PE LAB]*	
WED	**PPE** CVR	**EMT** AM	**EDC** MJM	**DLC(T)** RJPP,TG	***N*** ***C***	**EM-I** PLT/SMK	**TPDE** VA	**EM-I(T)** PLT/SMK	**EMT** AM
THU	**DLC** RJPP	**PPE** CVR	**TPDE** VA	**EDC** MJM	***H***	**E LAB /** MJM, TG *[Venue: PE LAB]* /		**EM-I LAB** PLT, CVR *[Venue: EM LAB]*	
FRI	**EDC** MJM	**EM-I** PLT/SMK	**EMT** AM	**PPE** CVR		**DLC** RJPP	**PPE** CVR	**TPDE** VA	**DLC/EDC** RJPP/MJM

STAFF CODE	**STAFF NAME**		**SUB CODE**	**SUBJECT NAME**	**ABBREVIATION**	**TOTAL PERIODS**
18135043	V.Ananth	VA	MA8353	Transforms and Partial Differential Equations	TPED	5
10235044	R.Jeyapandiprathap	RJPP	EE8351	Digital Logic Circuits (T)	DLC	5.5
10220003	A. Marimuthu	AM	EE8391	Electromagnetic Theory (T)	EMT	5.5
10220004/ 10209002	Dr.P.Loganthurai / Dr.S.M.Kannan	PLT/ SMK	EE8301	Electrical Machines – I (T)	EM-I	5.5
10230019	M.Jeyamurugan	MJM	EC8353	Electron Devices and Circuits	EDC	5.5
10220009	Dr.C.Vimalarani	CVR	ME8792	Power Plant Engineering	PPE	5
10230019	M.Jeyamurugan	MJM	EC8311	Electronics Laboratory	E LAB	4
10220004	Dr.P.Loganthurai	PLT	EE8311	Electrical Machines Laboratory - I	EM LAB-I	4

ANNA UNIVERSITY, CHENNAI

AFFILIATED INSTITUTIONS

REGULATIONS – 2017

CHOICE BASED CREDIT SYSTEM

B.E. ELECTRICAL AND ELECTRONICS ENGINEERING

CURRICULUM AND SYLLABUS - THIRD SEMESTER

SEMESTER III

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	MA8353	Transforms and Partial Differential Equations	BS	4	4	0	0	4
2.	EE8351	Digital Logic Circuits	PC	4	2	2	0	3
3.	EE8391	Electromagnetic Theory	PC	4	2	2	0	3
4.	EE8301	Electrical Machines - I	PC	4	2	2	0	3
5.	EC8353	Electron Devices and Circuits	ES	3	3	0	0	3
6.	ME8792	Power Plant Engineering	ES	3	3	0	0	3
PRACTICALS								
7.	EC8311	Electronics Laboratory	ES	4	0	0	4	2
8.	EE8311	Electrical Machines Laboratory - I	PC	4	0	0	4	2
			TOTAL	**30**	**16**	**6**	**8**	**23**

EE8351 **DIGITAL LOGIC CIRCUITS** **L T P C**
2 2 0 3

OBJECTIVES:

- To study various number systems and simplify the logical expressions using Boolean functions
- To study combinational circuits
- To design various synchronous and asynchronous circuits.
- To introduce asynchronous sequential circuits and PLDs

- To introduce digital simulation for development of application oriented logic circuits.

UNIT I NUMBER SYSTEMS AND DIGITAL LOGIC FAMILIES 6+6

Review of number systems, binary codes, error detection and correction codes (Parity and Hamming code) - Digital Logic Families -comparison of RTL, DTL, TTL, ECL and MOS families -operation, characteristics of digital logic family.

UNIT II COMBINATIONAL CIRCUITS

6+6

Combinational logic - representation of logic functions-SOP and POS forms, K-map representations - minimization using K maps - simplification and implementation of combinational logic – multiplexers and de multiplexers - code converters, adders, subtractors, Encoders and Decoders.

UNIT III SYNCHRONOUS SEQUENTIAL CIRCUITS 6+6

Sequential logic- SR, JK, D and T flip flops - level triggering and edge triggering - counters - asynchronous and synchronous type - Modulo counters - Shift registers - design of synchronous sequential circuits – Moore and Melay models- Counters, state diagram; state reduction; state assignment.

UNIT IV ASYNCHRONOUS SEQUENTIAL CIRCUITS AND PROGRAMMABILITY LOGIC DEVICES 6+6

Asynchronous sequential logic circuits-Transition tability, flow tability-race conditions, hazards &errors in digital circuits; analysis of asynchronous sequential logic circuits-introduction to Programmability Logic Devices: PROM – PLA –PAL, CPLD-FPGA.

UNIT V VHDL 6+6

RTL Design – combinational logic – Sequential circuit – Operators – Introduction to Packages – Subprograms – Test bench. (Simulation /Tutorial Examples: adders, counters, flip flops, Multiplexers & De multiplexers).

TOTAL : 60 PERIODS

OUTCOMES:

- Ability to design combinational and sequential Circuits.
- Ability to simulate using software package.
- Ability to study various number systems and simplify the logical expressions using Boolean functions
- Ability to design various synchronous and asynchronous circuits.
- Ability to introduce asynchronous sequential circuits and PLDs
- Ability to introduce digital simulation for development of application oriented logic circuits.

TEXT BOOKS:

1. James W. Bignel, Digital Electronics, Cengage learning, 5th Edition, 2007.
2. M. Morris Mano, 'Digital Design with an introduction to the VHDL', Pearson Education, 2013.
3. Comer "Digital Logic & State Machine Design, Oxford, 2012.

REFERENCES
1. Mandal, "Digital Electronics Principles & Application, McGraw Hill Edu, 2013.
2. William Keitz, Digital Electronics-A Practical Approach with VHDL, Pearson,2013.
3. Thomas L.Floyd, 'Digital Fundamentals', 11th edition, Pearson Education,2015.
4. Charles H.Roth, Jr, Lizy Lizy Kurian John, 'Digital System Design using VHDL, Cengage, 2013.
5. D.P.Kothari,J.S.Dhillon, 'Digital circuits and Design',Pearson Education,2016.

EE8391 ELECTROMAGNETIC THEORY

L	T	P	C
2	2	0	3

OBJECTIVES:
- To introduce the basic mathematical concepts related to electromagnetic vector fields
- To impart knowledge on the concepts of
  - ✓ Electrostatic fields, electrical potential, energy density and their applications.
  - ✓ Magneto static fields, magnetic flux density, vector potential and its applications.
  - ✓ Different methods of emf generation and Maxwell's equations
  - ✓ Electromagnetic waves and characterizing parameters

UNIT I ELECTROSTATICS – I 6+6

Sources and effects of electromagnetic fields – Coordinate Systems – Vector fields –Gradient, Divergence, Curl – theorems and applications - Coulomb's Law – Electric field intensity – Field due to discrete and continuous charges – Gauss's law and applications.

UNIT II ELECTROSTATICS – II 6+6

Electric potential – Electric field and equipotential plots, Uniform and Non-Uniform field, Utilization factor – Electric field in free space, conductors, dielectrics - Dielectric polarization – Dielectric strength - Electric field in multiple dielectrics – Boundary conditions, Poisson's and Laplace's equations, Capacitance, Energy density, Applications.

UNIT III MAGNETOSTATICS 6+6

Lorentz force, magnetic field intensity (H) – Biot–Savart's Law - Ampere's Circuit Law – H due to straight conductors, circular loop, infinite sheet of current, Magnetic flux density (B) – B in free space, conductor, magnetic materials – Magnetization, Magnetic field in multiple media – Boundary conditions, scalar and vector potential, Poisson's Equation, Magnetic force, Torque, Inductance, Energy density, Applications.

UNIT IV ELECTRODYNAMIC FIELDS 6+6

Magnetic Circuits - Faraday's law – Transformer and motional EMF – Displacement current - Maxwell's equations (differential and integral form) – Relation between field theory and circuit theory – Applications.

UNIT V ELECTROMAGNETIC WAVES 6+6

Electromagnetic wave generation and equations – Wave parameters; velocity, intrinsic impedance,

propagation constant – Waves in free space, lossy and lossless dielectrics, conductors- skin depth - Poynting vector – Plane wave reflection and refraction.

TOTAL : 60 PERIODS

OUTCOMES:

- Ability to understand the basic mathematical concepts related to electromagnetic vector fields.
- Ability to understand the basic concepts about electrostatic fields, electrical potential, energy density and their applications.
- Ability to acquire the knowledge in magneto static fields, magnetic flux density, vector potential and its applications.
- Ability to understand the different methods of emf generation and Maxwell's equations
- Ability to understand the basic concepts electromagnetic waves and characterizing parameters
- Ability to understand and compute Electromagnetic fields and apply them for design and analysis of electrical equipment and systems

TEXT BOOKS:

1. Mathew N. O. Sadiku, 'Principles of Electromagnetics', 6th Edition, Oxford University Press Inc. Asian edition, 2015.
2. William H. Hayt and John A. Buck, 'Engineering Electromagnetics', McGraw Hill Special Indian edition, 2014.
3. Kraus and Fleish, 'Electromagnetics with Applications', McGraw Hill International Editions, Fifth Edition, 2010.

REFERENCES

1. V.V.Sarwate, 'Electromagnetic fields and waves', First Edition, Newage Publishers, 1993.
2. J.P.Tewari, 'Engineering Electromagnetics - Theory, Problems and Applications', Second Edition, Khanna Publishers.
3. Joseph. A.Edminister, 'Schaum's Outline of Electromagnetics, Third Edition (Schaum's Outline Series), McGraw Hill, 2010.
4. S.P.Ghosh, Lipika Datta, 'Electromagnetic Field Theory', First Edition, McGraw Hil l Education(India) Private Limited, 2012.
5. K A Gangadhar, 'Electromagnetic Field Theory', Khanna Publishers; Eighth Reprint : 2015

EE8301 **ELECTRICAL MACHINES – I** **L T P C**

OBJECTIVES: **2 2 0 3**

UNIT I MAGNETIC CIRCUITS AND MAGNETIC MATERIALS 6+6

Magnetic circuits –Laws governing magnetic circuits - Flux linkage, Inductance and energy – Statically and Dynamically induced EMF - Torque – Properties of magnetic materials, Hysteresis and Eddy Current losses - AC excitation, introduction to permanent magnets- Transformer as a magnetically coupled circuit.

UNIT II TRANSFORMERS 6+6

Construction – principle of operation – equivalent circuit parameters – phasor diagrams, losses – testing – efficiency and voltage regulation-all day efficiency-Sumpner's test, per unit representation – inrush current - three phase transformers-connections – Scott Connection – Phasing of transformer– parallel operation of three phase transformers-auto transformer – tap changing transformers- tertiary winding.

UNIT III ELECTROMECHANICAL ENERGY CONVERSION AND CONCEPTS IN ROTATING MACHINES 6+6

Energy in magnetic system – Field energy and co energy-force and torque equations – singly and multiply excited magnetic field systems-mmf of distributed windings – Winding Inductances-, magnetic fields in rotating machines – rotating mmf waves – magnetic saturation and leakage fluxes.

UNIT IV DC GENERATORS 6+6

Construction and components of DC Machine – Principle of operation - Lap and wave windings-EMF equations– circuit model – armature reaction –methods of excitation-commutation - interpoles compensating winding –characteristics of DC generators.

UNIT V DC MOTORS 6+6

Principle and operations - types of DC Motors – Speed Torque Characteristics of DC Motors-starting and speed control of DC motors –Plugging, dynamic and regenerative braking- testing and efficiency – Retardation test- Swinburne's test and Hopkinson's test - Permanent Magnet DC (PMDC)motors-applications of DC Motor

TOTAL : 60 PERIODS

OUTCOMES:

- Ability to analyze the magnetic-circuits.
- Ability to acquire the knowledge in constructional details of transformers.
- Ability to understand the concepts of electromechanical energy conversion.
- Ability to acquire the knowledge in working principles of DC Generator.
- Ability to acquire the knowledge in working principles of DC Motor
- Ability to acquire the knowledge in various losses taking place in D.C. Machines

TEXT BOOKS:

1. Stephen J. Chapman, 'Electric Machinery Fundamentals'4th edition, McGraw Hill Education Pvt. Ltd, 2010.
2. P.C. Sen'Principles of Electric Machines and Power Electronics' John Wiley & Sons; 3rd Edition 2013.
3. Nagrath, I.J. and Kothari.D.P., Electric Machines', McGraw-Hill Education, 2004

REFERENCES

1. Theodore Wildi, “Electrical Machines, Drives, and Power Systems”, Pearson Education., (5th Edition), 2002.
2. B.R. Gupta ,’Fundamental of Electric Machines’ New age International Publishers,3rd Edition ,Reprint 2015.
3. S.K. Bhattacharya, ‘Electrical Machines’ McGraw - Hill Education, New Delhi, 3rd Edition,2009.
4. Vincent Del Toro, ‘Basic Electric Machines’ Pearson India Education, 2016.
5. Surinder Pal Bali, ‘Electrical Technology Machines & Measurements, Vol.II, Pearson, 2013.
6. Fitzgerald. A.E., Charles Kingsely Jr, Stephen D.Umans, ‘Electric Machinery’, Sixth edition, McGraw Hill Books Company, 2003.

EC8353 ELECTRON DEVICES AND CIRCUITS L T P C
3 0 0 3

OBJECTIVES:

The student should be made to:

- Understand the structure of basic electronic devices.
- Be exposed to active and passive circuit elements.
- Familiarize the operation and applications of transistor like BJT and FET.
- Explore the characteristics of amplifier gain and frequency response.
- Learn the required functionality of positive and negative feedback systems.

UNIT I PN JUNCTION DEVICES 9

PN junction diode –structure, operation and V-I characteristics, diffusion and transition capacitance - Rectifiers – Half Wave and Full Wave Rectifier,– Display devices- LED, Laser diodes, Zener diodecharacteristics- Zener Reverse characteristics – Zener as regulator

UNIT II TRANSISTORS AND THYRISTORS 9

BJT, JFET, MOSFET- structure, operation, characteristics and Biasing UJT, Thyristors and IGBT - Structure and characteristics.

UNIT III AMPLIFIERS 9

BJT small signal model – Analysis of CE, CB, CC amplifiers- Gain and frequency response – MOSFET small signal model– Analysis of CS and Source follower – Gain and frequency response- High frequency analysis.

UNIT IV MULTISTAGE AMPLIFIERS AND DIFFERENTIAL AMPLIFIER 9

BIMOS cascade amplifier, Differential amplifier – Common mode and Difference mode analysis – FET input stages – Single tuned amplifiers – Gain and frequency response – Neutralization methods, power amplifiers –Types (Qualitative analysis).

UNIT V FEEDBACK AMPLIFIERS AND OSCILLATORS 9

Advantages of negative feedback – voltage / current, series , Shunt feedback –positive feedback – Condition for oscillations, phase shift – Wien bridge, Hartley, Colpitts and Crystal oscillators.

TOTAL : 45 PERIODS

OUTCOMES:

Upon Completion of the course, the students will be ability to:

- Explain the structure and working operation of basic electronic devices.
- Able to identify and differentiate both active and passive elements
- Analyze the characteristics of different electronic devices such as diodes and transistors
- Choose and adapt the required components to construct an amplifier circuit.
- Employ the acquired knowledge in design and analysis of oscillators

TEXT BOOKS:

1. . David A. Bell ,"Electronic devices and circuits", Oxford University higher education, 5th edition 2008.
2. Sedra and smith, "Microelectronic circuits",7th Ed., Oxford University Press

REFERENCES:

1. Balbir Kumar, Shail.B.Jain, "Electronic devices and circuits" PHI learning private limited, 2nd edition 2014.
2. Thomas L.Floyd, "Electronic devices" Conventional current version, Pearson prentice hall, 10th Edition, 2017.
3. Donald A Neamen, "Electronic Circuit Analysis and Design" Tata McGraw Hill, 3rd Edition, 2003.
4. Robert L.Boylestad, "Electronic devices and circuit theory", 2002.
5. Robert B. Northrop, "Analysis and Application of Analog Electronic Circuits to Biomedical Instrumentation", CRC Press, 2004.

		L	T	P	C
ME8792	**POWER PLANT ENGINEERING**	**3**	**0**	**0**	**3**

OBJECTIVE:

- Providing an overview of Power Plants and detailing the role of Mechanical Engineers in their operation and maintenance.

UNIT I COAL BASED THERMAL POWER PLANTS 9

Rankine cycle - improvisations, Layout of modern coal power plant, Super Critical Boilers, FBC Boilers, Turbines, Condensers, Steam & Heat rate, Subsystems of thermal power plants – Fuel and ash handling, Draught system, Feed water treatment. Binary Cycles and Cogeneration systems.

UNIT II DIESEL, GAS TURBINE AND COMBINED CYCLE POWER PLANTS 9

Otto, Diesel, Dual & Brayton Cycle - Analysis & Optimisation. Components of Diesel and Gas Turbine power plants. Combined Cycle Power Plants. Integrated Gasifier based Combined Cycle systems.

UNIT III NUCLEAR POWER PLANTS 9

Basics of Nuclear Engineering, Layout and subsystems of Nuclear Power Plants, Working of Nuclear Reactors : Boil*ing Water Reactor* (BWR), P*ressurized Water Reactor* (PWR), CANada Deuterium-Uranium reactor (CANDU), Breeder, Gas Cooled and Liquid Metal Cooled Reactors. Safety measures for Nuclear Power plants.

UNIT IV POWER FROM RENEWABLE ENERGY 9

Hydro Electric Power Plants – Classification, Typical Layout and associated components including Turbines. Principle, Construction and working of Wind, Tidal, *Solar* Photo Voltaic (SPV), Solar Thermal, Geo Thermal, Biogas and Fuel Cell power systems.

UNIT V ENERGY, ECONOMIC AND ENVIRONMENTAL ISSUES OF POWER PLANTS 9

Power tariff types, Load distribution parameters, load curve, Comparison of site selection criteria, relative merits & demerits, Capital & Operating Cost of different power plants. Pollution control technologies including Waste Disposal Options for Coal and Nuclear Power Plants.

TOTAL : 45 PERIODS

OUTCOMES:

Upon the completion of this course the students will be able to

CO1 Explain the layout, construction and working of the components inside a thermal power plant.

CO2 Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.

CO3 Explain the layout, construction and working of the components inside nuclear power plants.

CO4 Explain the layout, construction and working of the components inside Renewable energy power plants.

CO5 Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.

TEXT BOOK:

1. Nag. P.K., "Power Plant Engineering", Third Edition, Tata McGraw – Hill Publishing Company Ltd., 2008.

REFERENCES:

1. El-Wakil. M.M., "Power Plant Technology", Tata McGraw – Hill Publishing Company Ltd., 2010.
2. Godfrey Boyle, "Renewable energy", Open University, Oxford University Press in association with the Open University, 2004.

3. Thomas C. Elliott, Kao Chen and Robert C. Swanekamp, "Power Plant Engineering", Second Edition, Standard Handbook of McGraw – Hill, 1998.

EC8311 ELECTRONICS LABORATORY L T P C
0 0 4 2

OBJECTIVES:

- To enability the students to understand the behavior of semiconductor device based on experimentation.

LIST OF EXPERIMENTS

1. Characteristics of Semiconductor diode and Zener diode
2. Characteristics of a NPN Transistor under common emitter , common collector and common base configurations
3. Characteristics of JFET and draw the equivalent circuit
4. Characteristics of UJT and generation of saw tooth waveforms
5. Design and Frequency response characteristics of a Common Emitter amplifier
6. Characteristics of photo diode & photo transistor, Study of light activated relay circuit
7. Design and testing of RC phase shift and LC oscillators
8. Single Phase half-wave and full wave rectifiers with inductive and capacitive filters
9. Differential amplifiers using FET
10. Study of CRO for frequency and phase measurements
11. Realization of passive filters

TOTAL: 60 PERIODS

OUTCOMES:

- Ability to understand and analyse electronic circuits**.**

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS:

1. Semiconductor devices like Diode, Zener Diode, NPN Transistors, JFET, UJT, Photo diode, Photo Transistor
2. Resistors, Capacitors and inductors
3. Necessary digital IC 8
4. Function Generators 10
5. Regulated 3 output Power Supply 5, ± 15V 10
6. CRO 10
7. Storage Oscilloscope 1
8. Bread boards
9. Atleast one demo module each for the listed equipments.
10. Component data sheets to be provided

EE8311 ELECTRICAL MACHINES LABORATORY-I L T P C
0 0 4 2

OBJECTIVES:

- To expose the students to the operation of D.C. machines and transformers and

give them experimental skill.

LIST OF EXPERIMENTS

1. Open circuit and load characteristics of DC shunt generator- critical resistance and critical speed.
2. Load characteristics of DC compound generator with differential and cumulative connections.
3. Load test on DC shunt motor.
4. Load test on DC compound motor.
5. Load test on DC series motor.
6. Swinburne's test and speed control of DC shunt motor.
7. Hopkinson's test on DC motor – generator set.
8. Load test on single-phase transformer and three phase transformers.
9. Open circuit and short circuit tests on single phase transformer.
10. Sumpner's test on single phase transformers.
11. Separation of no-load losses in single phase transformer.
12 Study of starters and 3-phase transformers connections**.**

TOTAL: 60 PERIODS

OUTCOMES:

- Ability to understand and analyze DC Generator
- Ability to understand and analyze DC Motor
- Ability to understand and analyse Transformers**.**

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS:

1. DC Shunt Motor with Loading Arrangement – 3 nos
2. DC Shunt Motor Coupled with Three phase Alternator – 1 No.
3. Single Phase Transformer – 4 nos
4. DC Series Motor with Loading Arrangement – 1 No.
5. DC compound Motor with Loading Arrangement – 1 No.
6. Three Phase Induction Motor with Loading Arrangement – 2 nos
7. Single Phase Induction Motor with Loading Arrangement – 1 No.
8. DC Shunt Motor Coupled With DC Compound Generator – 2 nos
9. DC Shunt Motor Coupled With DC Shunt Motor – 1 No.
10. Tachometer -Digital/Analog – 8 nos
11. Single Phase Auto Transformer – 2 nos
12. Three Phase Auto Transformer – 1 No.
13. Single Phase Resistive Loading Bank – 2 nos
14. Three Phase Resistive Loading Bank. – 2 nos

B.E. ELECTRICAL AND ELECTRONICS ENGINEERING

CURRICULUM AND SYLLABUS - FOURTH SEMESTER

SEMESTER IV

S.NO.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
THEORY								
1.	MA8491	Numerical Methods	BS	4	4	0	0	4
2.	EE8401	Electrical Machines - II	PC	4	2	2	0	3
3.	EE8402	Transmission and Distribution	PC	3	3	0	0	3
4.	EE8403	Measurements and Instrumentation	PC	3	3	0	0	3
5.	EE8451	Linear Integrated Circuits and Applications	PC	3	3	0	0	3
6.	IC8451	Control Systems	PC	5	3	2	0	4
PRACTICALS								
7.	EE8411	Electrical Machines Laboratory - II	PC	4	0	0	4	2
8.	EE8461	Linear and Digital Integrated Circuits Laboratory	PC	4	0	0	4	2
9.	EE8412	Technical Seminar	EEC	2	0	0	2	1
			TOTAL	**32**	**18**	**4**	**10**	**25**

MA8491 **NUMERICAL METHODS** **L T P C**
4 0 0 4

OBJECTIVES :

- To introduce the basic concepts of solving algebraic and transcendental equations.
- To introduce the numerical techniques of interpolation in various intervals in real life
- situations.
- To acquaint the student with understanding of numerical techniques of differentiation and integration which plays an important role in engineering and technology disciplines.
- To acquaint the knowledge of various techniques and methods of solving ordinary differential equations.
- To understand the knowledge of various techniques and methods of solving various types of partial differential equations.

UNIT I SOLUTION OF EQUATIONS AND EIGENVALUE PROBLEMS 12

Solution of algebraic and transcendental equations - Fixed point iteration method – Newton Raphson method - Solution of linear system of equations - Gauss elimination method – Pivoting - Gauss Jordan method – Iterative methods of Gauss Jacobi and Gauss Seidel - Eigenvalues of a matrix by Power method and Jacobi's method for symmetric matrices.

UNIT II INTERPOLATION AND APPROXIMATION 12

Interpolation with unequal intervals - Lagrange's interpolation – Newton's divided difference interpolation – Cubic Splines - Difference operators and relations - Interpolation with equal intervals - Newton's forward and backward difference formulae.

UNIT III NUMERICAL DIFFERENTIATION AND INTEGRATION 12

Approximation of derivatives using interpolation polynomials - Numerical integration using Trapezoidal, Simpson's 1/3 rule – Romberg's Method - Two point and three point Gaussian quadrature formulae – Evaluation of double integrals by Trapezoidal and Simpson's 1/3 rules.

UNIT IV INITIAL VALUE PROBLEMS FOR ORDINARY DIFFERENTIAL EQUATIONS 12

Single step methods - Taylor's series method - Euler's method - Modified Euler's method - Fourth order Runge - Kutta method for solving first order equations - Multi step methods - Milne's and Adams - Bash forth predictor corrector methods for solving first order equations.

UNIT V BOUNDARY VALUE PROBLEMS IN ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS 12

Finite difference methods for solving second order two - point linear boundary value problems - Finite difference techniques for the solution of two dimensional Laplace's and Poisson's equations on rectangular domain – One dimensional heat flow equation by explicit and implicit (Crank Nicholson) methods – One dimensional wave equation by explicit method.

TOTAL : 60 PERIODS

OUTCOMES :

Upon successful completion of the course, students should be able to:

- Understand the basic concepts and techniques of solving algebraic and transcendental equations.
- Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.
- Apply the numerical techniques of differentiation and integration for engineering problems.
- Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
- Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

TEXTBOOKS :

1. Burden, R.L and Faires, J.D, "Numerical Analysis", 9th Edition, Cengage Learning, 2016.
2. Grewal, B.S., and Grewal, J.S., "Numerical Methods in Engineering and Science", Khanna Publishers, 10th Edition, New Delhi, 2015.

REFERENCES :

1. Brian Bradie, "A Friendly Introduction to Numerical Analysis", Pearson Education, Asia, New Delhi, 2007.

2. Gerald. C. F. and Wheatley. P. O., "Applied Numerical Analysis", Pearson Education, Asia, 6th Edition, New Delhi, 2006.
3. Mathews, J.H. "Numerical Methods for Mathematics, Science and Engineering", 2nd Edition, Prentice Hall, 1992.
4. Sankara Rao. K., "Numerical Methods for Scientists and Engineers", Prentice Hall of India Pvt. Ltd, 3rd Edition, New Delhi, 2007.
5. Sastry, S.S, "Introductory Methods of Numerical Analysis", PHI Learning Pvt. Ltd, 5th Edition, 2015.

EE8401	ELECTRICAL MACHINES – II	L	T	P	C
		2	2	0	3

OBJECTIVES:

To impart knowledge on the following Topics

- Construction and performance of salient and non – salient type synchronous generators.
- Principle of operation and performance of synchronous motor.
- Construction, principle of operation and performance of induction machines.
- Starting and speed control of three-phase induction motors.
- Construction, principle of operation and performance of single phase induction motors and special machines.

UNIT I SYNCHRONOUS GENERATOR 6+6

Constructional details – Types of rotors –winding factors- emf equation – Synchronous reactance – Armature reaction – Phasor diagrams of non salient pole synchronous generator connected to infinite bus--Synchronizing and parallel operation – Synchronizing torque -Change of excitation and mechanical input- Voltage regulation – EMF, MMF, ZPF and A.S.A methods – steady state power-angle characteristics– Two reaction theory –slip test -short circuit transients - Capability Curves

UNIT II SYNCHRONOUS MOTOR 6+6

Principle of operation – Torque equation – Operation on infinite bus bars - V and Inverted V curves – Power input and power developed equations – Starting methods – Current loci for constant power input, constant excitation and constant power developed-Hunting – natural frequency of oscillations – damper windings- synchronous condenser.

UNIT III THREE PHASE INDUCTION MOTOR 6+6

Constructional details – Types of rotors –- Principle of operation – Slip –cogging and crawling- Equivalent circuit – Torque-Slip characteristics - Condition for maximum torque – Losses and efficiency – Load test - No load and blocked rotor tests - Circle diagram – Separation of losses – Double cage induction motors –Induction generators – Synchronous induction motor.

UNIT IV STARTING AND SPEED CONTROL OF THREE PHASE INDUCTION MOTOR

6+6

Need for starting – Types of starters – DOL, Rotor resistance, Autotransformer and Star- delta starters – Speed control – Voltage control, Frequency control and pole changing – Cascaded connection-V/f control – Slip power recovery scheme-Braking of three phase induction motor: Plugging, dynamic braking and regenerative braking.

UNIT V SINGLE PHASE INDUCTION MOTORS AND SPECIAL MACHINES 6+6

Constructional details of single phase induction motor – Double field revolving theory and operation – Equivalent circuit – No load and blocked rotor test – Performance analysis – Starting methods of single-phase induction motors – Capacitor-start capacitor run Induction motor- Shaded pole induction motor - Linear induction motor – Repulsion motor - Hysteresis motor - AC series motor- Servo motors- Stepper motors - introduction to magnetic levitation systems.

TOTAL PERIODS : 60

OUTCOMES:

- Ability to understand the construction and working principle of Synchronous Generator
- Ability to understand MMF curves and armature windings.
- Ability to acquire knowledge on Synchronous motor.
- Ability to understand the construction and working principle of Three phase Induction Motor
- Ability to understand the construction and working principle of Special Machines
- Ability to predetermine the performance characteristics of Synchronous Machines.

TEXT BOOKS:

1. A.E. Fitzgerald, Charles Kingsley, Stephen. D. Umans, 'Electric Machinery', Mc Graw Hill publishing Company Ltd, 2003.
2. Vincent Del Toro, 'Basic Electric Machines' Pearson India Education, 2016.
3. Stephen J. Chapman, 'Electric Machinery Fundamentals'4th edition, McGraw Hill Education Pvt. Ltd, 2010.

REFERENCES

1. D.P. Kothari and I.J. Nagrath, 'Electric Machines', McGraw Hill Publishing Company Ltd, 2002.
2. P.S. Bhimbhra, 'Electrical Machinery', Khanna Publishers, 2003.
3. M.N. Bandyopadhyay, Electrical Machines Theory and Practice, PHI Learning PVT LTD., New Delhi, 2009.
4. B.R.Gupta, 'Fundamental of Electric Machines' New age International Publishers,3rd Edition ,Reprint 2015.
5. Murugesh Kumar, 'Electric Machines', Vikas Publishing House Pvt. Ltd, 2002.
6. Alexander S. Langsdorf, 'Theory of Alternating-Current Machinery', McGraw Hill Publications, 2001.

EE8402 TRANSMISSION AND DISTRIBUTION L T P C
3 0 0 3

OBJECTIVES:

- To study the structure of electric power system and to develop expressions for the computation of transmission line parameters.
- To obtain the equivalent circuits for the transmission lines based on distance and to determine voltage regulation and efficiency.
- To understand the mechanical design of transmission lines and to analyze the voltage distribution in insulator strings to improve the efficiency.
- To study the types, construction of cabilitys and methods to improve the efficiency.
- To study about distribution systems, types of substations, methods of grounding, EHVAC, HVDC and FACTS.

UNIT I TRANSMISSION LINE PARAMETERS 9

Structure of Power System - Parameters of single and three phase transmission lines with single and double circuits -Resistance, inductance and capacitance of solid, stranded and bundled conductors, Symmetrical and unsymmetrical spacing and transposition - application of self and mutual GMD; skin and proximity effects -Typical configurations, conductor types and electrical parameters of EHV lines.

UNIT II MODELLING AND PERFORMANCE OF TRANSMISSION LINES 9

Performance of Transmission lines - short line, medium line and long line - equivalent circuits, phasor diagram, attenuation constant, phase constant, surge impedance - transmission efficiency and voltage regulation, real and reactive power flow in lines - Power Circle diagrams - Formation of Corona – Critical Voltages – Effect on Line Performance.

UNIT III MECHANICAL DESIGN OF LINES 9

Mechanical design of OH lines – Line Supports –Types of towers – Stress and Sag Calculation – Effects of Wind and Ice loading. Insulators: Types, voltage distribution in insulator string, improvement of string efficiency, testing of insulators.

UNIT IV UNDER GROUND CABILITYS 9

Underground cabilitys - Types of cabilitys – Construction of single core and 3 core Cabilitys - Insulation Resistance – Potential Gradient - Capacitance of Single-core and 3 core cabilitys - Grading of cabilitys - Power factor and heating of cabilitys– DC cabilitys.

UNIT V DISTRIBUTION SYSTEMS 9

Distribution Systems – General Aspects – Kelvin's Law – AC and DC distributions - Techniques of Voltage Control and Power factor improvement – Distribution Loss –Types of Substations -Methods of Grounding – Trends in Transmission and Distribution: EHVAC, HVDC and FACTS (Qualitative treatment only).

TOTAL PERIODS : 45

OUTCOMES:

- To understand the importance and the functioning of transmission line parameters.
- To understand the concepts of Lines and Insulators.
- To acquire knowledge on the performance of Transmission lines.
- To understand the importance of distribution of the electric power in power system.
- To acquire knowledge on Underground Cabilitys
- To become familiar with the function of different components used in Transmission and

Distribution levels of power system and modelling of these components.

TEXT BOOKS:

1. D.P.Kothari, I.J. Nagarath, 'Power System Engineering', Mc Graw-Hill Publishing Company limited, New Delhi, Second Edition, 2008.
2. C.L.Wadhwa, 'Electrical Power Systems', New Academic Science Ltd, 2009.
3. S.N. Singh, 'Electric Power Generation, Transmission and Distribution', Prentice Hall of India Pvt. Ltd, New Delhi, Second Edition, 2011.

REFERENCES

1. B.R.Gupta, 'Power System Analysis and Design' S. Chand, New Delhi, Fifth Edition, 2008.
2. Luces M.Fualken berry, Walter Coffer, 'Electrical Power Distribution and Transmission', Pearson Education, 2007.
3. Arun Ingole, "power transmission and distribution" Pearson Education, 2017
4. J.Brian, Hardy and Colin R.Bayliss 'Transmission and Distribution in Electrical Engineering', Newnes; Fourth Edition, 2012.
5. G.Ramamurthy, "Handbook of Electrical power Distribution," Universities Press, 2013.
6. V.K.Mehta, Rohit Mehta, 'Principles of power system', S. Chand & Company Ltd, New Delhi, 2013

EE8403	MEASUREMENTS AND INSTRUMENTATION	L	T	P	C
		3	0	0	3

OBJECTIVES:

To impart knowledge on the following Topics

- Basic functional elements of instrumentation
- Fundamentals of electrical and electronic instruments
- Comparison between various measurement techniques
- Various storage and display devices
- Various transducers and the data acquisition systems

UNIT I INTRODUCTION 9

Functional elements of an instrument – Static and dynamic characteristics – Errors in measurement – Statistical evaluation of measurement data – Standards and calibration- Principle and types of analog and digital voltmeters, ammeters.

UNIT II ELECTRICAL AND ELECTRONIC INSTRUMENTS 9

Principle and types of multi meters – Single and three phase watt meters and energy meters – Magnetic measurements – Determination of B-H curve and measurements of iron loss – Instrument transformers – Instruments for measurement of frequency and phase.

UNIT III COMPARATIVE METHODS OF MEASUREMENTS 9

D.C potentiometers, D.C (Wheat stone, Kelvin and Kelvin Double bridge) & A.C bridges (Maxwell, Anderson and Schering bridges), transformer ratio bridges, self-balancing bridges. Interference & screening – Multiple earth and earth loops - Electrostatic and electromagnetic Interference – Grounding techniques.

UNIT IV STORAGE AND DISPLAY DEVICES 9

Magnetic disk and tape – Recorders, digital plotters and printers, CRT display, digital CRO, LED, LCD & Dot matrix display – Data Loggers.

UNIT V TRANSDUCERS AND DATA ACQUISITION SYSTEMS 9

Classification of transducers – Selection of transducers – Resistive, capacitive & inductive Transducers – Piezoelectric, Hall effect, optical and digital transducers – Elements of data acquisition system – Smart sensors-Thermal Imagers.

TOTAL PERIODS : 45

OUTCOMES:

- To acquire knowledge on Basic functional elements of instrumentation
- To understand the concepts of Fundamentals of electrical and electronic instruments
- Ability to compare between various measurement techniques
- To acquire knowledge on Various storage and display devices
- To understand the concepts Various transducers and the data acquisition systems
- Ability to model and analyze electrical and electronic Instruments and understand the operational features of display Devices and Data Acquisition System.

TEXT BOOKS:

1. A.K. Sawhney, 'A Course in Electrical & Electronic Measurements & Instrumentation', Dhanpat Rai and Co, 2010.
2. J. B. Gupta, 'A Course in Electronic and Electrical Measurements', S. K. Kataria & Sons, Delhi, 2013.
3. Doebelin E.O. and Manik D.N., Measurement Systems – Applications and Design, Special Indian Edition, McGraw Hill Education Pvt. Ltd., 2007.

REFERENCES

1. H.S. Kalsi, 'Electronic Instrumentation', McGraw Hill, III Edition 2010.
2. D.V.S. Murthy, 'Transducers and Instrumentation', Prentice Hall of India Pvt Ltd, 2015.
3. David Bell, ' Electronic Instrumentation & Measurements', Oxford University Press,2013.
4. Martin Reissland, 'Electrical Measurements', New Age International (P) Ltd., Delhi, 2001.
5. Alan. S. Morris, Principles of Measurements and Instrumentation, 2nd Edition, Prentice Hall of India, 2003.

EE8451 LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

L	T	P	C
3	0	0	3

OBJECTIVES:

To impart knowledge on the following topics

- Signal analysis using Op-amp based circuits.
- Applications of Op-amp.
- Functional blocks and the applications of special ICs like Timers, PLL circuits, regulator Circuits.
- IC fabrication procedure.

UNIT I IC FABRICATION 9

IC classification, fundamental of monolithic IC technology, epitaxial growth, masking and etching, diffusion of impurities. Realisation of monolithic ICs and packaging. Fabrication of diodes, capacitance, resistance, FETs and PV Cell.

UNIT II CHARACTERISTICS OF OPAMP 9

Ideal OP-AMP characteristics, DC characteristics, AC characteristics, differential amplifier; frequency response of OP-AMP; Basic applications of op-amp – Inverting and Non-inverting Amplifiers, summer, differentiator and integrator-V/I & I/V converters.

UNIT III APPLICATIONS OF OPAMP 9

Instrumentation amplifier and its applications for transducer Bridge, Log and Antilog Amplifiers-Analog multiplier & Divider, first and second order active filters, comparators, multivibrators, waveform generators, clippers, clampers, peak detector, S/H circuit, D/A converter (R- 2R ladder and weighted resistor types), A/D converters using opamps.

UNIT IV SPECIAL ICs 9

Functional block, characteristics of 555 Timer and its PWM application - IC-566 voltage controlled oscillator IC; 565-phase locked loop IC, AD633 Analog multiplier ICs.

UNIT V APPLICATION ICs 9

AD623 Instrumentation Amplifier and its application as load cell weight measurement - IC voltage regulators –LM78XX, LM79XX; Fixed voltage regulators its application as Linear power supply - LM317, 723 Variability voltage regulators, switching regulator- SMPS - ICL 8038 function generator IC.

TOTAL PERIODS : 45

OUTCOMES:

- Ability to acquire knowledge in IC fabrication procedure
- Ability to analyze the characteristics of Op-Amp
- To understand the importance of Signal analysis using Op-amp based circuits.
- Functional blocks and the applications of special ICs like Timers, PLL circuits, regulator Circuits.
- To understand and acquire knowledge on the Applications of Op-amp
- Ability to understand and analyse, linear integrated circuits their Fabrication and Application.

TEXT BOOKS:

1. David A. Bell, ‘Op-amp & Linear ICs’, Oxford, 2013.
2. D. Roy Choudhary, Sheil B. Jani, ‘Linear Integrated Circuits’, II edition, New Age, 2003.
3. Ramakant A.Gayakward, ‘Op-amps and Linear Integrated Circuits’, IV edition, Pearson Education, 2003 / PHI. 2000.

REFERENCES

1. Fiore,”Opamps & Linear Integrated Circuits Concepts & applications”, Cengage, 2010.
2. Floyd ,Buchla,”Fundamentals of Analog Circuits, Pearson, 2013.
3. Jacob Millman, Christos C.Halkias, ‘Integrated Electronics - Analog and Digital circuits system’, McGraw Hill, 2003.
4. Robert F.Coughlin, Fredrick F. Driscoll, ‘Op-amp and Linear ICs’, Pearson, 6th edition,2012.
5. Sergio Franco, ‘Design with Operational Amplifiers and Analog Integrated Circuits’, Mc Graw Hill, 2016.
6. Muhammad H. Rashid,’ Microelectronic Circuits Analysis and Design’ Cengage

Learning, 2011.

IC8451 CONTROL SYSTEMS LT P C
3 2 0 4

COURSE OBJECTIVES

- To understand the use of transfer function models for analysis physical systems and introduce the control system components.
- To provide adequate knowledge in the time response of systems and steady state error analysis.
- To accord basic knowledge in obtaining the open loop and closed–loop frequency responses of systems.
- To introduce stability analysis and design of compensators
- To introduce state variable representation of physical systems

UNIT I SYSTEMSANDREPRESENTATION 9

Basic elements in control systems: – Open and closed loop systems – Electrical analogy of mechanical and thermal systems – Transfer function – AC and DC servomotors – Block diagram reduction techniques – Signal flow graphs.

UNIT II TIMERESPONSE 9

Time response: – Time domain specifications – Types of test input – I and II order system response – Error coefficients – Generalized error series – Steady state error – Root locus construction- Effects of P, PI, PID modes of feedback control –Time response analysis.

UNIT III FREQUENCY RESPONSE 9

Frequency response: – Bode plot – Polar plot – Determination of closed loop response from open loop response - Correlation between frequency domain and time domain specifications

UNIT IV STABILITYANDCOMPENSATORDESIGN 9

Characteristics equation – Routh Hurwitz criterion – Nyquist stability criterion- Performance criteria – Effect of Lag, lead and lag-lead compensation on frequency response-Design of Lag, lead and lag- lead compensator using bode plots.

UNIT V STATEVARIABLEANALYSIS 9

Concept of state variables – State models for linear and time invariant Systems – Solution of state and output equation in controllable canonical form – Concepts of controllability and observability.

TOTAL (L: 45+T:30): 75 PERIODS

COURSE OUTCOMES

At the end of the course, the student should have the :

- Ability to develop various representations of system based on the knowledge of Mathematics, Science and Engineering fundamentals.
- Ability to do time domain and frequency domain analysis of various models of linear system.
- Ability to interpret characteristics of the system to develop mathematical model.
- Ability to design appropriate compensator for the given specifications.
- Ability to come out with solution for complex control problem.
- Ability to understand use of PID controller in closed loop system.

TEXT BOOKS

1. Nagarath, I.J. and Gopal, M., "Control Systems Engineering", New Age International Publishers, 2017.
2. Benjamin C. Kuo, "Automatic Control Systems", Wiley, 2014.

REFERENCES

1. Katsuhiko Ogata, "Modern Control Engineering", Pearson, 2015.
2. Richard C.Dorf and Bishop, R.H., "Modern Control Systems", Pearson Education,2009.
3. John J.D., Azzo Constantine, H. and Houpis Sttuart, N Sheldon, "Linear Control System Analysis and Design with MATLAB", CRC Taylor& Francis Reprint 2009.
4. Rames C.Panda and T. Thyagarajan, "An Introduction to Process Modelling Identification and Control of Engineers", Narosa Publishing House, 2017.
5. M.Gopal, "Control System: Principle and design", McGraw Hill Education, 2012.
6. NPTEL Video Lecture Notes on "Control Engineering "by Prof. S. D. Agashe, IIT Bombay.

EE8411	ELECTRICAL MACHINES LABORATORY - II	L	T	P	C
		0	0	4	2

OBJECTIVES:

- To expose the students to the operation of synchronous machines and induction motors and give them experimental skill.

LIST OF EXPERIMENTS

1. Regulation of three phase alternator by EMF and MMF methods.
2. Regulation of three phase alternator by ZPF and ASA methods.
3. Regulation of three phase salient pole alternator by slip test.
4. Measurements of negative sequence and zero sequence impedance of alternators.
5. V and Inverted V curves of Three Phase Synchronous Motor.
6. Load test on three-phase induction motor.
7. No load and blocked rotor tests on three-phase induction motor (Determination of equivalent circuit parameters).
8. Separation of No-load losses of three-phase induction motor.
9. Load test on single-phase induction motor.
10. No load and blocked rotor test on single-phase induction motor.
11. Study of Induction motor Starters

TOTAL: 60 PERIODS

OUTCOMES:

At the end of the course, the student should have the :

- Ability to understand and analyze EMF and MMF methods
- Ability to analyze the characteristics of V and Inverted V curves
- Ability to understand the importance of Synchronous machines
- Ability to understand the importance of Induction Machines
- Ability to acquire knowledge on separation of losses

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS:

1. Synchronous Induction motor 3HP – 1 No.
2. DC Shunt Motor Coupled With Three phase Alternator – 4 nos
3. DC Shunt Motor Coupled With Three phase Slip ring Induction motor – 1 No.
4. Three Phase Induction Motor with Loading Arrangement – 2 nos
5. Single Phase Induction Motor with Loading Arrangement – 2 nos
6. Tachometer -Digital/Analog – 8 nos
7. Single Phase Auto Transformer – 2 nos
8. Three Phase Auto Transformer – 3 nos
9. Single Phase Resistive Loading Bank – 2 nos
10. Three Phase Resistive Loading Bank – 2 nos
11. Capacitor Bank – 1 No.

EE8461 LINEAR AND DIGITAL INTEGRATE CIRCUITS LABORATORY **L T P C 0 0 4 2**

OBJECTIVES:

- To learn design, testing and characterizing of circuit behavior with digital and analog ICs.

LIST OF EXPERIMENTS

1. Implementation of Boolean Functions, Adder and Subtractor circuits.
2. Code converters: Excess-3 to BCD and Binary to Gray code converter and vice-versa
3. Parity generator and parity checking
4. Encoders and Decoders
5. Counters: Design and implementation of 3-bit modulo counters as synchronous and Asynchronous types using FF IC's and specific counter IC.
6. Shift Registers: Design and implementation of 4-bit shift registers in SISO, SIPO, PISO, PIPO modes using suitability IC's.
7. Study of multiplexer and de multiplexer
8. Timer IC application: Study of NE/SE 555 timer in Astability, Monostability operation.
9. Application of Op-Amp: inverting and non-inverting amplifier, Adder, comparator, Integrator and Differentiator.
10. Voltage to frequency characteristics of NE/ SE 566 IC.
11. Variability Voltage Regulator using IC LM317.

TOTAL: 60 PERIODS

OUTCOMES:

At the end of the course, the student should have the :

- Ability to understand and implement Boolean Functions.
- Ability to understand the importance of code conversion
- Ability to Design and implement 4-bit shift registers
- Ability to acquire knowledge on Application of Op-Amp
- Ability to Design and implement counters using specific counter IC.

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS: (3 per Batch)

S.No	Name of the equipments / Components	Quantity Required	Remarks
1	Dual ,(0-30V) variability Power Supply	10	-
2	CRO	9	30MHz
3	Digital Multimeter	10	Digital
4	Function Generator	8	1 MHz
5	IC Tester (Analog)	2	
6	Bread board	10	
7	Computer (PSPICE installed)	1	
Consumabilitys (sufficient quantity)			
1	IC 741/ IC NE555/566/565		
2	Digital IC types		
3	LED		
4	LM317		
5	LM723		
6	ICSG3524 / SG3525		
7	Transistor – 2N3391		
8	Diodes, IN4001,BY126		
9	Zener diodes		
10	Potentiometer		
11	Step-down transformer 230V/12-0-12V		
12	Capacitor		
13	Resistors 1/4 Watt Assorted		
14	Single Strand Wire		

EE8412 **TECHNICAL SEMINAR** **L T P C**
0 0 2 1

OBJECTIVES:

- To encourage the students to study advanced engineering developments
- To prepare and present technical reports.
- To encourage the students to use various teaching aids such as overhead projectors, power point presentation and demonstrative models.

METHOD OF EVALUATION:

During the seminar session each student is expected to prepare and present a topic on engineering/ technology, for a duration of about 8 to 10 minutes. In a session of three periods per week, 15 students are expected to present the seminar. Each student is expected to present atleast twice during the semester and the student is evaluated based on that. At the end of the semester, he / she can submit a report on his / her topic of seminar and marks are given based on the report. A Faculty guide is to be allotted and he / she will guide and monitor the progress of the student and maintain attendance also. Evaluation is 100% internal.

TOTAL: 30 PERIODS

OUTCOMES:

- Ability to review, prepare and present technological developments
- Ability to face the placement interviews

ANNA UNIVERTISY, CHENNAI -25.
OFFICE OF THE CONTROLLER OF EXAMINATIONS

RULES OF THE EXAMINATIONS

A candidate is permitted to use geometric tools, non-programmable calculators and approved tables and data books only during the theory and the practical examinations. No other material/gadget (including cell phone) should be brought inside the examination hall.

A candidate should neither possess/refer any forbidden material in any form nor should seek/obtain assistance in any form from any person/source towards answering the questions during the examinations. He/she should not assist other candidates in any form towards answering the questions during the examinations. The candidate should not reveal his/her identity in any form in the answer scripts. The candidate should not indulge in canvassing either directly or indirectly to award more than deserving marks in the exanimations. The candidate should maintain discipline and decorum during the examinations.

Violation of the above rules in any form during the examinations will attract punishment ranging from levying fine to permanently debarring the candidate from continuing his/her studies as given below.

Sl.No.	Nature of Malpractice	Maximum Punishment
1	Appeal by the candidate in the answer script to show mercy by way of awarding more than deserving marks.	Fine of Rs. 1000/- per subject.
2	The candidate writing his/her name in the answer script.	
3	The candidate writing his/her registration number/college name in places other than specified in the answer script	
4	Any special marking in the answer script by the candidate.	
5	The candidate communicating with neighbouring candidate orally or non-verbally; the candidate causing suspicious movement of his/her body.	
6	Irrelevant writing by the candidate in the answer script.	
7	The candidate marking on the question paper or writing answer on his/her question paper or making use of his/her question paper for rough work	
8	The candidate possessing cell phones/programmable calculator(s)/any other electronic storage device(s) **gadgets**	Invalidating the examination of the particular subject written by the candidate
9	The Candidate facilitating the other candidate(s) to copy from his /her answer script	

10	The candidate possessing any incriminating material(s) (whether used or not). For example:- Written or printed materials, bits of papers containing written information, writings on scale, calculator, handkerchief, dress, part of the body, Hall Ticket, etc.	Invalidating the examinations of the subject concerned and all the theory and the practical subjects of the current semester registered by the candidate. Further the candidate is not considered for revaluation of answer scripts of the arrears-subjects. If the candidate has registered for arrears – subjects only, invalidating the examinations of all the arrears – subjects registered by the candidate.
11	The candidate possessing cell phone(s)/programmable calculator(s)/any other electronic storage device(s) **gadgets** and containing incriminating materials (whether used or not).	
12	The Candidate possessing the question paper of another candidate with additional writing on it.	
13	The candidate passing his/her question paper to another candidate with additional writing on it	
14	The candidate passing incriminating materials brought into the examination hall in any medium (hard/soft) to other candidate(s).	
15	The candidate copying from neighbouring candidate.	
16	The candidate taking out of the examination hall answer booklet(s), used or unused	
17	Appeal by the candidate in the answer script coupled with a promise of any form of consideration.	
18	Candidate destroying evidence relating to an alleged irregularity.	Invalidating the examinations of the subject concerned and all the theory and the practical subjects of the current semester registered by the candidate. Further the candidate is not considered for revaluation of answer scripts of the arrears-subjects. If the candidate has registered for arrears – subjects only, invalidating the examinations of all the arrears – subjects registered by the candidate. **Additional Punishment:** *1.* if the candidate has not completed the programme, he/she is debarred from continuing his/her studies for one year i.e., for two subsequent semesters. However the student is permitted to appear for the examination in all the arrears-subjects up to the last semester during the debarred period. 2. if the candidate has completed the programme, he/she is prevented from writing the examinations of the arrears-subjects for two subsequent semesters.
19	Vulgar/offensive writings by the candidate in the answer script.	Invalidating the examinations of all the theory and practical subjects of the current semester and all the arrears –subjects registered by the candidate.
20	The candidate possessing the answering script of another candidate	
21	The candidate passing his /her answer script to another candidate	

22	Involved in any one or more of the malpractices of serial no. 8 to 21 for the second or subsequent times.	Invalidating the examinations of all the theory and practical subjects of the current semester and all the arrears –subjects registered by the candidate. **Additional Punishment:** *(i)* If the candidate has not completed the programme, he/she is debarred from continuing his/her studies for one year i.e., for two subsequent semesters. However the student is permitted to appear for the examination in all the arrears-subjects up to the last semester during the debarred period. (ii) If the candidate has completed the programme, he/she is prevented from writing the examinations of the arrears-subjects for two subsequent semesters.
23	The candidate substituting an answer book let prepared outside the examination hall for the one already distributed to the candidate	
24	The candidate indulge in any disruptive conduct including, but not limited to, shouting, assault of invigilator, officials or students using abusive and /or threatening language, destruction of property.	Invalidating the examinations of all the theory and practical subjects of the current semester and all the arrears –subjects registered by the candidate. **Additional Punishment:** *(i)* if the candidate has not completed the programme, he/she is debarred from continuing his/her studies for **two years** i.e., for four subsequent semesters. However the student is permitted to appear for the examination in all the arrears-subjects up to the last semester during the debarred period. (ii) if the candidate has completed the programme, he/she is prevented from writing the examinations of the arrears-subjects for four subsequent semesters.
25	The candidate harass or engage others to harass on his/her behalf an invigilator, official, witnesses or any other person in relation to an irregularity by making telephone calls, visits, mails or by any other means.	
26	Candidate possessing any firearm/weapon inside the examination hall.	
27	Cases of Impersonation	(i) Handing over the impersonator to the police with a complaint to take appropriate action against the person involved in the impersonation by the Chief Supt. (ii) If a student of this University is found to impersonate a 'bonafide student', the impersonating student is debarred from continuing his/her studies and writing the examinations **permanently.** He/she is not eligible for any further admission to any programme of the University. (iii) Debarring the 'bonafide student' for whom the impersonation was done from continuing his/her studies and writing the examinations **permanently.** He/she is not eligible for any further admission to any programme of the University.

CONTROLLER OF EXAMINATIONS

K.L.N. COLLEGE OF ENGINEERING, Pottapalayam 630612
(11 km from Madurai City)

STUDENTS LEAVE APPLICATION FORM

Department of Electrical and Electronics Engineering **Date:**

Name of the Student: **Roll No. :** **Sem / Sec. :**

Details of leave availing / applied: Date & Day: **No. of. Days (a):**

Reason for Leave :

No. of days, leave & OD, already availed (b): **Total. No. of. Days (a+b):**

% of Attendance as on : _____is _____

Signature of the Student **Name, Mobile No. & Signature of Parent / Guardian**

Recommended / Not Recommended

Class Coordinator **HOD/EEE**

K.L.N. COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINERING

NORMS FOR ATTENDING WORKSHOP / SEMINAR/ TECHNICAL SYMPOSIUM/ CONFERENCE / TECHNICAL CONTEST etc.

Students are regularly encouraged to attend skill development programme such as workshop / seminar / Technical Symposium / Conference / Technical Contest etc., outside the college. This is to facilitate to improve their technical skills and competency. However, frequently attending such events will reduce their academic performance, as they are not consistent in attending regular Theory / Practical classes. Also, it was reported that, few students were absent for class tests /CIT's and regular practical classes, in order to attend such skill development programme. Hence, the following norms are framed, in order to balance the academic performance and facilitate the students to attend skill development programme.

1. A student will be permitted, to attend skill development programme, not **more than three events per semester (6 days – OD- maximum).**
2. Academic performance of the students will be considered, before permitting a student to attend skill development programme **(Upto 3 arrears, passed 4 subjects in Class test / CIT's – only will be permitted).**
3. Attendance of the student should **not be less than 90% as on date.**
4. No history of disciplinary action taken on the students**.**
5. Students will not be permitted during Class test / Centralized Internal Test to attend Skill development programme. However students with high academic performance will be permitted, considering the nature of the event during class tests.
6. Students will be permitted to attend such events, only in the higher learning Institutions. (IITs, IISC, NITs, Anna University, MIT, NAAC accredited (A grade), Deemed Universities, NBA accredited, Government & Government Aided Institutions and Self financing Engineering Colleges).
7. Students are instructed to refer the academic calendar of the College, regularly so as to know the Internal test schedule and other events.
8. Students registering any events, without following above norms and not obtaining prior permission, **will not be granted ON DUTY and no RETEST** will be conducted. Necessary action will be taken against defaulters.
9. ON DUTY form is revised, accordingly, in order to incorporate all the above details.
10. Class Co-ordinators / Academic Co-ordinators are instructed to recommend for OD, as per the above norms.

HOD/EEE

K.L.N.COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Format No.: F127

ON DUTY REQUISITION FORM
STUDENTS – TO ATTEND SKILL DEVELOPMENT PROGRAMMES
(Workshop / Seminar / Symposium etc.)

Date: _____

To,

The Principal,
KLNCE,
Pottapalayam.

Respected Sir,

Sub.: Request for OD to attend_____
(Workshop / Conference / Value added course / Symposium / Project Contest / Seminar / Certificate Course / In-plant training / Internship)

As, I am going to attend_____conducted by _____ (Venue & Place) from_____to_____. Please permit me to attend the programme and also grant me O.D. for these days.

S.No	Roll No.	Name & (Degree, Semester / Section)	No. of Programmes already attended & Days OD availed	No. of Arrears in AU Exam	No. of subjects failed in Class Test	No. of Subjects failed in CIT's	ATT % As on	Sign

Discipline / misbehavior, reported if any :

Clash with Internal test if any :

Recommended by		
Class Co-ordinator	HOD	
	OD Permitted	OD Approved

BONAFIDE CERTICATE

To

The Principal,

KLNCE,

Pottapalayam.

Sub: Requisition for Bonafide Certificate

****

Respected Sir,

Kindly issue Bonafide Certificate to me

Purpose :

Venue :

Name :

Father's Name :

Roll No. :

Department :

Year & Sem :

Thanking You,

Yours Sincerely,

Date :

Station :

Recommended by :

Received :

Format No.:11
Issue No.: 02
Revision No.: 01
Date: 23/06/12

K.L.N. COLLEGE OF ENGINEERING, POTTAPALAYAM - 630 612
Department of Electrical and Electronics Engineering
Lecture Schedule[Mon-5, Tue –2, Wed-4,*Thu*-1, Fri-5&*8*]

Degree/Programme : **B.E / EEE**

Course code & Name: **EE8351 & Digital Logic Circuits** Duration: **June-Oct 2019.** Semester: **III**

Staff: **R. Jeyapandiprathap** Regulation: **2017/AUC**

AIM

- To understand and analyse the digital electronic circuits.

OBJECTIVES

- To study various number systems , simplify the logical expressions using Boolean functions
- To study implementation of combinational circuits
- To design various synchronous and asynchronous circuits.
- To introduce asynchronous sequential circuits and PLDs
- To introduce digital simulation for development of application oriented logic circuits.

Prerequisites: Computer Programming

COURSE OUTCOMES: After the course, the student should be able to

CO	Course Outcomes	POs	PSOs
02.1	alyze the various types of number system and compare the digital logic families	1,2,3,4	1
02.2	ply K –Map for simplification and implementation of combinational logic circuit	1,2,3,4	1
02.3	Design the synchronous Sequential logic circuits, draw the block diagram of Shift Registers	1,2,3,4	1
02.4	Design of asynchronous sequential circuits and describe the operation of Programmable Logic Devices	1,2,3,4	1
02.5	sign the VHDL coding for combinational logic and Sequential circuits	1,2,3,4	1

	Date	Period No's	Topics to be Covered	Book No [Page No]	
UNIT-I NUMBER SYSTEMS AND DIGITAL LOGIC FAMILIES				**Target Period : 6+6=12**	
1			Review of number systems: **Decimal, Binary, Octal, Hexadecimal Number System.**	T1[11]	-
2					
3			**Tutorial-1**	-	-
4			Binary codes: **ASCII**, Error detection codes.**Tutorial-2**	R4[62,75]	-
5			Error correction codes (Parity and Hamming code)	R4[79]	-
6			**Tutorial-3**	-	-
7			Digital Logic Families: RTL , DTL & ECL -operation	T1[134]	R9[7.6]
8			**Tutorial-4**	-	-
9			TTL –operation & MOS families -operation	T1[136,147]	R9[7.19]
10			**Tutorial-5**		
11			Comparison of RTL, DTL, TTL, ECL and MOS families, characteristics of digital logic family, Revision.	T1[151]	R9[7.31] R9[7.2]
12			**Tutorial-6**	-	-
13			Seminar-I	-	-
Total Periods:			***Assignment - I***	*Date of Submission*	
			Test – I: Class Test-I	*Portion **: Unit – I***	
UNIT – II : COMBINATIONAL CIRCUITS				**Target Periods : 6+6=12**	

14			Combinational logic circuits **AND,OR,NOT,NAND,NOR,EX-OR**	T1[57]	R9[1.4]
15			Representation of logic functions &**Tutorial-7**	T1[57]	R9[1.4]
16			SOP and POS forms & K-map representations	T1[60-76]	R9[1.18]
17			**Tutorial-8**	-	-
18			Minimization using K maps	T1[78]	R9[1.56]
19			**Tutorial-9**	-	-
20			Simplification and implementation of combinational logic	T1[89]	R9[1.69]
21			**Tutorial-10**	-	-
22			Multiplexers and demultiplexers & Code converters	T1[249]	R9[2.40]
23			**Tutorial-11**	-	-
24			Adders, subtractors, encoders and decoders.	T2[126-128]	R9[2.5]
25			**Tutorial-12**	-	-
26			**Tutorial-13***, Revision	-	-
Total Periods:			***Assignment - II***	*Date of Submission :*	
			Test – II: CIT-I	*Portion :* ***Unit – I,II***	
UNIT – III : SYNCHRONOUS SEQUENTIAL CIRCUITS				**Target Periods : 9+3=12**	
27			Sequential logic- SR, JK flip flops, D and T flip flops	T1[326]	R9[3.9]
28			**Tutorial-14**	-	-
29			Level triggering and edge triggering of flip flops	T1[335]	R9[3.3]
30			**Tutorial-15**	-	-
31			Counters - asynchronous type, Counters - synchronous type	T1[400]	R9[4.59]
32			**Tutorial-15**	-	-
33			Modulo counters – Shift registers –SISO,SIPO,PISO,PIPO`	T1[395,385]	R9[4.62]
34			**Tutorial-17**	-	-
35			Design of synchronous sequential circuits – Moore and Melay models	T1[353]	R9[4.2]
36			**Tutorial-18**	-	-
37			Counters, state diagram; state reduction; state assignment.	T1[355]	R9[4.5]
38			**Tutorial-19**	-	-
39			**Tutorial-20***, Revision	-	-
Total Periods:			***Test – III [27.08.19]: Class Test-II***	*Portion* ***: Unit – III***	
UNIT – IV : Asynchronous Sequential Circuits and Programmable Logic Devices				**Target Periods : 6+6=12**	
40			Asynchronous sequential logic circuits	T1[442]	R9[5.2]
41			**Tutorial-21**	-	-
42			Transition stability, flow stability & Race conditions	T1[456]	R9[5.30]
43			**Tutorial-22**	-	-
44			Hazards in digital circuits , Errors in digital circuits	T1[467]	R9[B.2]
45			**Tutorial-23**	-	-
46			Analysis of asynchronous sequential logic circuits	T1[448]	R9[5.4]
47			**Tutorial-24**	-	-
48			Introduction to Programmable Logic Devices: PROM	R4[582]	R9[6.5]
49			**Tutorial-25**	-	-
50			PLA, PAL, CPLD(notes).	T1[509]	R4[608]
51			Field Programmable Gate Array (FPGA), **Tutorial-26**	R9 [31.9]	R9[6.33]
52			**Tutorial-27*&** Revision	-	-
53			Quiz-I	-	-
Total Periods:			***Assignment - III***	*Date of Submission :*	
			Test – IV: CIT-II	*Portion:* ***Unit – III, IV***	
UNIT – V : VHDL				**Target Periods : 6+6=12**	
54			RTL Design	R5[44]	R9[8.106]
55			Combinational logic circuit-Gates&Adders,Counters	R5[17]	R9[8.94]
56			Sequential circuit-FlipFlops,FSM,MUX&DEMUX	R5[47]	R9[8.77]
57			Operators & Types of Operators, **Tutorial-28**	R5[76]	R9[8.16]
58			Introduction to Packages & Subprograms	R5[76]	R9[8.69]
59			Test bench,**Tutorial-29**	-	R9[8.115]
60			**Tutorial-30,** Revision		
61			Simulation /Tutorial Examples: adders-**31**	-	R9[8.98]
62			Simulation /Tutorial Examples: counters-**32**	-	R9[8.86]

63			Simulation /Tutorial Examples: flip-flops-**33**	R5[44]	R9[8.106]
64			Simulation /Tutorial Examples: FSM-**34**	-	R9[8.94]
65			Simulation /Tutorial Examples: MUX&DEMUX **,Tutorial-35**	R5[54]	-
66			*Quiz-II*	-	-
67			*Seminar-II*	-	-
68			**NPTEL Video & Self Study Topics**	-	-
69			*Content Beyond Syllabus: Verilog code language for VLSI software based", designed specifically for use in digital electronics and logic circuits drive simulations*		
Total Periods:					
			Test – V: Class Test-III	*Portion :* ***Unit V***	

Books: Text (T) / Reference(R):

S.No		Title of the Book	Author	Publisher	Year
1	T1	Digital Systems – Principles and Design	Raj Kamal	Pearson Edison, 2nd edition & Cengage	2007
		Digital Electronics	James W Bignel		
2	T2	Digital Design with an introduction to the VHDL	M. Morris Mano	Pearson Education	2013
3	T3	Digital Logic & State Machine Design,	Comer	Oxford	2012
4	R1	Digital Electronics Principles & Application	Mandal	McGraw Hill Edu	2013
5	R2	Digital Electronics-A Practical Approach with VHDL	William Keitz	Pearson	2013
6	R3	Digital Fundamentals	Thomas L Floyd	11th edition, Pearson Education	2015
7	R4	Fundamentals of Digital Circuits	Anand Kumar	PHI	2013
8	R5	Digital System Design using VHDL	Charles H.Roth,Jr,Lizy Lizy Kurian John	Cengage	2013
9	R6	Digital Logic, Application & Design	John M.Yarbrough	Thomson	2002
10	R7	VHDL Basics to Programming	Gaganpreet Kaur	Pearson	2013
11	R8	HDL Programming Fundamental, VHDL& Verilog	Botros	Digital Electronics	2013
12	*R9*	*Digital Logic Circuits*	*A.P.Godse & D.A.Godse*	*Technical Publications*	*2018*
13	*R10*	*Digital Circuits and Design*	*D.P.kothari,J.SDhillon*	Pearson Education	2016

Mapping of Course Outcomes (COs) , Course (C), Program Specific Outcomes (PSOs) with Program Outcomes. (POs) – Before CBS

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	2	2	1	1	-	-	-	-	-	-	-	-	2	-
C202.2	2	2	2	2	-	-	-	-	-	-	-	-	2	-
C202.3	2	2	2	2	-	-	-	-	-	-	-	-	2	-
C202.4	1	2	2	1	-	-	-	-	-	-	-	-	2	-
C202.5	1	1	1	1	-	-	-	-	-	-	-	-	1	-
C202	2	2	2	1	-	-	-	-	-	-	-	-	2	-

content Beyond Syllabus Added(CBS)	POs strengthened / vacant filled	CO / Unit
"Verilog code language for VLSI software based", designed specifically for use in digital electronics and logic circuits drive simulations.	PO5(2) strengthened	C202.5/V

NPTEL:

Unit	http://nptel.ac.in/courses/webcourse-contents/ digital electronics/	
I	**http://nptel.ac.in/courses/117103064/** NPTEL >> Electronics & Communication Engineering >> Digital Circuits (Web) >> Digital and Analog Signals	IIT Madras
II	**http://nptel.ac.in/courses/117106086/** NPTEL >> Electronics & Communication Engineering >> Digital Circuits and Systems (Video) >> Introduction To Digital Circuits	IIT Guwahati
III IV	**http://nptel.ac.in/courses/117105080/** NPTEL >> Electronics & Communication Engineering >> Digital Systems Design (Video) >> Introduction to Digital Systems Design	IIT Kharagpur
V	**http://nptel.ac.in/courses/117108040/**	IISc Bangalore

	NPTEL >> Electronics & Communication Engineering >> Digital System design with PLDs and FPGAs (Video) >> Course Contents, Objective	

Format No.:11
Issue No.: 02
Revision No.: 01
Date: 23/06/12

K.L.N. COLLEGE OF ENGINEERING,

POTTAPALAYAM - 630 612

Lecture Schedule

Degree/Programme : **B.E / EEE**
Course code & Name : **EC8353 & ELECTRON DEVICES AND CIRCUITS**
Semester : **III**

Duration : **Jun-Oct 2019.**
Regulation : **2017/AUC**
Staff : **M. Jeyamurugan**

OBJECTIVES: The student should be made to:

- Understand the structure of basic electronic devices.
- Be exposed to active and passive circuit elements.
- Familiarize the operation and applications of transistor like BJT and FET.
- Explore the characteristics of amplifier gain and frequency response.
- Learn the required functionality of positive and negative feedback systems

Prerequisites: Circuit theory, Engineering Physics

COURSE OUTCOMES: After the course, the student should be able to

CO	Course Outcomes	POs	PSOs
C205.1	**Analyze** how the AC supply is converted in to DC supply in the power supply circuit.	1,2	1
C205.2	**Analyze** how an SCR can be triggered ON by a pulse applied to the gate terminal using UJT.	1,2	1
C205.3	**Analysis** the small signal performances of single stage BJT and FET amplifier.	1,2,4	1
C205.4	**Analysis** how the differential amplifier, single tuned amplifier and power amplifiers amplify the frequency signals and **Select** a suitable amplifier for the application of TV stations transmitter at a desired radio frequency.	1,2,4	1
C205.5	**Design** RC, LC and Crystal oscillator using BJT and **Generate** a radio frequency signal between 1MHz and 500MHz using BJT	1,2,3	1

S. No	Date	Period Number	Topics to be Covered	Book No [Page No]	
UNIT – I : PN JUNCTION DEVICES				**Target Periods : 9+2=11**	
1			PN junction diode – Structure, operation	T1[10]	R7(1.1)
2			PN junction diode – V-I characteristics	T1[34]	R7(1.5)
3			Diffusion capacitance , Transition capacitance	T1[50]	R7(1.10,14)
4			Rectifiers – Half Wave Rectifier	T1[71]	R7(1.16)
5			Full Wave Rectifier – Two diode FWR, Bridge Rectifier	T1[75]	R7(1.23,29)
6			Tutorial-1	-	-
7			Display devices- LED	T1[945]	R7(1.37)
8			Laser diodes	T1[981]	R7(1.40)
9			Zener diode characteristics - Zener Reverse characteristics	T1[59]	R7(1.43,45)
10			Zener as regulator	T1[108]	R7(1.48)
11			Tutorial-2	-	-
Total Periods:			***Assignment - I***	*Date of Submission :*	
			CT-I:	***Portion :*** *Unit – 1*	
UNIT – II : TRANSISTORS				**Target Periods : 9+2=11**	

12			BJT- structure, operation, characteristics	T1[143]	R7(2.2)
13			BJT Biasing	T1[180]	R7(2.68)
14			Tutorial-3	-	-
15			JFET- structure, operation, characteristics	T1[345]	R7(2.27)
16			JFET Biasing	T1[380]	R7(2.125)
17			MOSFET- structure, operation, characteristics	T1[367]	R7(2.40)
18			MOSFET Biasing	T1[417]	R7(2.152)
19			Tutorial-4	-	-
20			UJT – - structure, operation, characteristics	T1[927]	R7(2.174)
21			Thyristor – Structure and characteristics of SCR	T1[893]	R7(2.182)
22			IGBT – Structure and characteristics	-	R7(2.200)
Total Periods:			***Assignment - II***	*Date of Submission :*	
			CIT-I:	***Portion :*** *Unit – I,II*	
UNIT – III : AMPLIFIERS				**Target Periods : 9+2=11**	
23			BJT small signal model	T1[238]	R7(3.1)
24			Analysis of CE amplifiers	T1[254]	R7(3.27)
25			Analysis of CB amplifiers	T1[268]	R7(3.40)
26			Analysis of CC amplifiers	T1[263]	R7(3.43)
27			Gain and frequency response of BJT	T1[314]	R7(3.52)
28			Tutorial-5	-	-
29			MOSFET small signal model	T1[435]	R7(3.70)
30			Analysis of CS	T1[439]	R7(3.78)
31			Analysis of Source follower	T1[448]	R7(3.82)
32			High frequency analysis of FET	T1[460]	R7(3.90)
33			Tutorial-6	-	-
Total Periods:			***Assignment - III***	*Date of Submission :*	
			CT – II:	***Portion :*** *Unit – III*	
UNIT – IV : MULTISTAGE AMPLIFIERS AND DIFFERENTIAL AMPLIFIER				**Target Periods : 9+2=11**	
34			BIMOS cascade amplifier	T1[505]	R7(4.1)
35			Differential amplifier	T1[510]	R7(4.2)
36			Common mode and Difference mode analysis		R7(4.4,9)
37			FET input stages – analysis of JFET source coupled pair	R6[361]	R7(4.25)
38			Tutorial-7	-	-
39			Single tuned amplifiers	T1[524]	R7(4.31)
40			Gain and frequency response of tuned amplifiers		R7(4.1)
41			Neutralization methods	R6[482]	R7(4.40)
42			Tutorial-8	-	-
43			Power amplifiers	T1[807]	R7(4.42)
44			Qualitative analysis of Power amplifiers		R7(4.48)
Total Periods:			*Quiz*	C205.4	-
			CIT-II:	***Portion :*** *Unit – III,IV*	
UNIT – V : FEEDBACK AMPLIFIERS AND OSCILLATORS				**Target Periods : 9+2=11**	
45			Advantages of negative feedback Amplifier	T1[544]	R7(5.10)
46			Voltage series feedback Amplifier	T1[545]	R7(5.8,29)
47			Current series feedback Amplifier	T1[569]	R7(5.8,31)
48			Voltage shunt feedback Amplifier	R6[570]	R7(5.9,37)
49			Current shunt feedback Amplifier	T1[576]	R7(5.9,34)
50			Tutorial-9	-	-
51			Positive feedback - Condition for oscillations	R6[508]	R7(5.43,45)
52			Phase shift oscillators, Wien bridge oscillators	R6[593]	R7(5.48,61)

53			Hartley oscillators, Colpitts oscillators	R6[580]	R7(5.80,86)
54			Crystal oscillators	R6[609]	R7(5.97)
55			Tutorial-10	-	-
Total Periods:			*Seminar*	C205.5	-
			CT-III:	***Portion :*** *Unit – V*	
56			*CBS : Diode, Transistor testing & Evaluation*	*CO205.1, CO205.2*	*PO5,PO7*
57			*NPTEL : BJT Small signal analysis – Module 2 – lecture 5*	*CO205.3*	-
		FN	***Model Test: 14.10.19 – 19.10.19***	***Portion :*** *5 Units*	

NPTEL: http://nptel.ac.in/courses/108102095/

Unit	http://nptel.ac.in/courses/ webcourse-contents/electronics/		Module No.	Lecture No.
I	PN Diode	IIT, Kharagpur	01	02
	LED	IIT, Bombay	01	31
II	BJT	IIT, Kharagpur	01	03
III	FET & MOSFET	IIT, Delhi	05	02
IV	Differential Amplifiers	IIT, Delhi	07	09
V	Feedback configurations & Multistage amplifier	IIT, Delhi	01	04
	Oscillators	IIT, Madras	02	10

Books: Text-(T) / Reference-(R)

S. No		Title of the Book	Author	Publisher	Edition	Year
1	**T1**	Electronic Devices and Circuits	David A. Bell	Oxford University higher education	5	2008
2	**T2**	Microelectronic Circuits	Sedra and smith	Oxford University Press	7	2004
3	**R1**	Electronic Devices and Circuits	Balbir Kumar, Shail.B.Jain	PHI learning private limited	2	2014
4	**R2**	Electron Devices, Conventional current version	Thomas L.Floyd	Pearson prentice hall	10	2017
5	**R3**	Electronic Circuit Analysis and Design	Donald A Neamen	Tata McGraw Hill	3	2003
6	**R4**	Electronic Devices and Circuit theory	Robert L.Boylestad			2002
7	**R5**	Analysis and Application of Analog Electronic Circuits to Biomedical Instrumentation	Robert B. Northrop	CRC Press		2004
8	***R6***	*Electronic Devices and Circuits*	*S.Shalivahanan N.Suresh Kumar*	*McGraw Hill Education (India) Pvt. Ltd*	*3*	*2014*
9	***R7***	*Electronic Devices and Circuits*	*T.Joel*	*Sruthi Publishers*		*2014*

Mapping of Course Outcomes (COs) , Course (C), Program Specific Outcomes (PSOs) with Program Outcomes. (POs) – Before CBS

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	2	1	1	2	-	-	-	-	-	-	-	-	2	-
C205.2	2	2	2	2	-	-	-	-	-	-	-	-	2	-
C205.3	2	2	2	2	-	1	-	-	-	-	-	-	2	-
C205.4	2	2	1	2	-	1	-	-	-	-	-	-	2	-
C205.5	2	3	1	2	-	1	-	-	-	-	-	-	2	-
C205	2	2	2	2	-	1	-	-	-	-	-	-	2	-

Content Beyond Syllabus Added(CBS)	POs strengthened / vacant filled	CO / Unit
Diode testing & Evaluation - Demonstration	PO5,PO7-(1) / vacant filled	C205.1 / I
Transistor testing & Evaluation - Demonstration	PO5,PO7-(1) / vacant filled	C205.2 / II

PROGRAM OUTCOMES

Electrical and Electronics Engineering Graduates will be able to:

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

Electrical and Electronics Engineering Graduates will be able to:

PSO1: Apply the fundamentals of mathematics, science and engineering knowledge to identify, formulate, design and investigate complex engineering problems of electric circuits, analog and digital electronic circuits, electrical machines and power systems.

PSO2: Apply appropriate techniques and modern Engineering hardware and software tools in power systems to engage in life- long learning and to successfully adapt in multi disciplinary environments. **PSO3:** Understand the impact of Professional Engineering solutions in societal and environmental context, commit to professional ethics and communicate effectively.

PSOs	PROGRAMME OUTCOMES(POs)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PSO1	3	3	3	3	2	1	1	1	1	1	1	1
PSO2	1	1	1	1	3	1	1	1	3	1	1	3
PSO3	1	1	2	2	1	3	3	3	2	3	2	1

Strength of correlation:1(Weak),2(Medium),3(Strong)

Schedule: *Thursday : 1.10 PM – 4.20 PM*			B1	B2	B3	B4	B5	B6 B7	BATCH - B
1			*Instruction Class* & Ex. No : 10						
I-CYCLE - Experiment No's									
2			1	2	3	4	5	6	
3			2	3	4	5	6	1	
4			3	4	5	6	1	2	
5			4	5	6	1	2	3	
6			5	6	1	2	3	4	
7			*6*	1	2	3	4	*5*	
II-CYCLE - Experiment No's									
8			7	8	9	11	12	7	
9			8	9	11	12	7	8	
10			9	11	12	7	8	9	
11			11	12	7	8	9	11	
12			12	7	8	9	11	12	
13			Repeat Class						
14			*Repeat Class*						
15			*Model Exam*						

Schedule: *Tuesday : 1.10 PM – 4.20 PM*			A1	A2,	A3,	A4,	A5	A6 A7	BATCH - A
1			*Instruction Class* & Ex. No : 10						
I-CYCLE - Experiment No's									
2			1	2	3	4	5	6	
3			2	3	4	5	6	1	
4			3	4	5	6	1	2	
5			4	5	6	1	2	3	
6			5	6	1	2	3	4	
7			*6*	1	2	3	4	*5*	
II-CYCLE - Experiment No's									
8			7	8	9	11	12	7	
9			8	9	11	12	7	8	
10			9	11	12	7	8	9	
11			11	12	7	8	9	11	
12			12	7	8	9	11	12	
13			Repeat Class						
14	*Spl.class*		*Repeat Class*						
15	*1.10.19*		*Model Exam*						

STAFF INCHARGE **HOD/EEE**

Format No.:11
Issue No.: 02
Revision No.: 01
Date: 23/06/12

K.L.N. COLLEGE OF ENGINEERING
LECTURE SCHEDULE (Mon-3;Wed-1;Thur-2;Fri-4,6)

Course/Branch : **B.E/EEE** Subject : **Power Plant Engineering**
Duration : **June 2019- October 2019** Subject Code : **ME8792**
Year/Semester : II/**III** Staff handling : **Dr.C.Vimalarani**

S.No	Date	Period	Topics to be Covered	Book No [Page No]
UNIT I - COAL BASED THERMAL POWER PLANTS				**Target periods :9**
1.			Rankine cycle –improvisations-The ideal and reheat Rankine cycle, Efficiency of Rankine cycle	T1(42),R5(30-62)
2.			Layout of modern coal power plant with Super-heater and Re-heaters, Economizer	T1(74), R5(93)
3.			Super Critical Boilers, FBC Boilers	T1(283,385),R5(168-176)
4.			Condensers-Jet condenser, Surface condenser	T1(432,561), R6(195)
5.			Turbines-Types of turbines, Steam & Heat rate	R5(211-215),T1(374),R4(1.76-1.89), R4(1.95)
6.			Fuel handling, coal conveyor, Type of pulverizer	T1(252), R8(203), R5(99-105),
7.			Ash handling system	T1(402),R4(1.127-1.131), R5(131),
8.			Draught system Feed water treatment.- deaerator	T1(403-411),R5(143-150), R4(1.137-1.141), R4(1.148-1.153)
9.			Binary Cycles	T1(105),R5(62-65)
10.			Cogeneration systems-Combined gas–steam power plant	T1(78),R4(1.160-1.161)
11.				
Total Periods:			***Assignment - I*** ***Date of Submission :***	
Class Test-I				***Portion :*** *Unit – 1*
UNIT II - DIESEL, GAS TURBINE AND COMBINED CYCLE POWER PLANTS				**Target periods :9**
12.			Otto Cycle - Analysis	R5(69-71)
13.			Otto Cycle - Optimisation.	R5(69-71)
14.			Diesel Cycle – Air-standard Efficiency of Diesel Cycle & Optimisation.	R5(76-78)
15.			Dual Cycle - Analysis & Optimisation.	R5(78-80)
16.			Brayton Cycle - Analysis & Optimisation.	R4(2.58-2.68)
17.			Components of Diesel power plants - Fuel storage and Fuel supply system, Air supply system	T1(737-748), R5(358-377)
18.				
19.			Components of Gas Turbine power plants-Closed cycle gas turbine plant, Open cycle gas turbine plant	T1(772-775),R5(456-458),R4(2.115-2.119)
20.			Combined Cycle Power Plants.	R4(2.125-2.133)
21.			Integrated Gasifier based Combined Cycle systems.	R4(2.133-2.134)
Total Periods:			***Assignment - II*** ***Date of Submission :***	
CIT-I				***Portion :*** *Unit – 1&II*
UNIT III - NUCLEAR POWER PLANTS				**Target Periods :9**
22.			Basics of Nuclear Engineering	R5(640-654)
23.			Layout and subsystems of Nuclear Power Plants-Nuclear Reactors- Moderator, Reflector, Coolant Control rods.	R5(659-663),R4(3.20-3.24)
24.				
25.			Working of Nuclear Boiling Water Reactor (BWR)	T1(632-637),R5(666-667)
26.			Working of Pressurized Water Reactor (PWR	T1(637-640),R5(664-665)
27.			Working of Nuclear CANada Deuterium-Uranium reactor (CANDU)	R5(666-669),R4(3.29)
28.			Working of Nuclear Breeder Reactor	R5(671-672)R4(3.31-3.32)
29.			Working Gas Cooled Reactor	T1(640-641),R5(668-669)
30.			Working of Liquid Metal Cooled Reactor	T1(641-643),R5(670)
31.			Safety measures for Nuclear Power plants	R5(684-687)

32.			**NPTEL Video :Lec 13 Nuclear Power Plants.**	
Total Periods:			***Assignment - III***	***Date of Submission :***
Class Test-II (26^{th} August – 3^{rd} September 2019)				***Portion :*** *Unit – III*
UNIT IV - POWER FROM RENEWABLE ENERGY				**Target Periods:9**
33.			Lay out of Hydro Electric Power Plants	T1(667-675), R5(527-543)
34.			Hydro Electric Power Plants – High head plant, Medium head plant,Low head plant.	T1(676-678), R5(543-546)
35.				
36.			Pumped storage plant	T1(678), R5(546)
37.			Principle, Construction and working of Wind power systems-Vertical-Axis Turbines, Horizontal axis Turbine	R5(807-810), R4(4.37-4.44)
38.			Principle, Construction and working of Tidal power systems.	T1(922-929), R5(814-818)
39.			Principle, Construction and working of Solar Photo Voltaic (SPV) power systems.	T1(909-911),R5(849-850), R4(4.74-4.78)
40.			Principle, Construction and working of Solar Thermal power systems.	T1(903-905), R5(821-831), R4(4.95-4.100)
41.			Principle, Construction and working of Geo Thermal power systems.	T1(929-934), R5(831-834)
42.			Principle, Construction and working of Biogas power systems.	T1(935-937), R5(836-844)
43.			Principle, Construction and working of Fuel Cell power systems.	T1(879-884), R5(856-859)
44.			**Seminar**	
45.				
Total Periods:				
CIT -II				***Portion : Unit – III&IV***
UNIT V - ENERGY, ECONOMIC AND ENVIRONMENTAL ISSUES OF POWER PLANTS				**Target Periods:9**
46.			Power tariff types	R5(733-737)
47.			Load distribution parameters and load curve	T1(2-9), R5(737-743),R4(5.18-5.23)
48.			Comparison of site selection criteria of different power plants.	R4(5.61-5.62)
49.			Comparison of relative merits of different power plants.	R4(5.68)
50.				
51.			Comparison of Capital and operating Cost of different power plants.	R4(5.29-5.32)
52.			Pollution control technologies including Waste Disposal Options for Coal Power Plant.	R5(1003-1009), R4(5.68-5.78),
53.				
54.			Pollution control technologies including Waste Disposal Options for Nuclear Power Plant.	R5(1009-1010), R4(5.80-5.88)
55.				
56.			**Quiz**	
Total Periods:				
57.			**Solar power monitoring system using IoT - Content beyond Syllabus(CBS)**	
Class Test - III				***Portion : Unit – V***
Model Theory				***Portion : Unit – All units***

Regulation : **2017** /AUC

AIM **:** Expose the students to basics of various power plants so that they will have the comprehensive idea of power system operation.

OBJECTIVE **:** Providing an overview of Power Plants and detailing the role of Mechanical Engineers in the operation and maintenance.

Pre-requisites: 1. Engineering-Chemistry, 2. Basic Civil and Mechanical Engg

Course Outcomes – After the course, the student should be able to

Course	Course Outcome
06.1	Identify the various components of modern coal power plant and analyze the safety measures of environmental factors in thermal power plant.

06.2	Apply the knowledge of various gas power cycles to analyze the construction and working of various liquid and gas Power Plants.
06.3	Review the layout and working of the components of nuclear power plants and analyze the safety measures of the environment for the healthy society.
06.4	Identify the various renewable energy resources of power generation and gain the knowledge for sustainable development.
06.5	Formulate the cost of electrical energy based on Power tariff, analyse the Economics and discuss the safety aspects of power plant operation

Book Reference

Book No	Title of the Book	Author	Publisher	Year
T1	Power Plant Engineering	P.K. Nag	Tata McGraw – Hill Publishing Company Ltd.	Third Edition, 2008
R1	Power Plant Technology	M.M. El-Wakil	Tata McGraw – Hill Publishing Company Ltd.	2010
R2	Standard Handbook of Power Plant Engineering,	Thomas C. Elliott, Kao	Second Edition, McGraw – Hill.	1998
R3	Renewable energy	Godfrey Boyle	Oxford Universit.	2004
R4	Power Plant Engineering	Dr.G.K.Vijayarahghavan Dr.R.Rajappan Dr.S.Sundaravalli	Laxmi Publications P(ltd).	
R5	A text book of Power Plant Engineering	R.K.Rajput	Laxmi Publications P(ltd).	2010

Mapping of Course Outcomes (COs) , Course (C), Program Specific Outcomes (PSOs) with Program Outcomes. (POs) – Before CBS [Levels of correlation: 3(High), 2(Medium), 1(low)]

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	2	2	-	-	-	2	2	2	-	-	-	-	2	-
C206.2	2	2	-	-	-	2	2	2	-	-	-	-	2	-
C206.3	2	2	-	-	-	2	2	2	-	-	-	-	2	-
C206.4	2	2	-	-	1#	2	2	2	-	-	-	-	2	-
C206.5	2	2	-	-	-	2	2	2	-	-	-	-	2	-
C206	2	2	-	-	-	2	2	2	-	-	-	-	2	-

Content Beyond Syllabus Added(CBS)	Os strengthened / vacant filled	O / Unit
Solar power monitoring system using IoT	PO5(vacant filled)	06.4 / IV

K.L.N. COLLEGE OF ENGINEERING, POTTAPALAYAM 630 611

Lecture Schedule

BATCH: 2017-2021 Academic Years: 2019-2020/Odd semester

Branch : EEE Subject: Electrical Machines-I

Duration : June '19 to Oct '19 Subject Code : EE8301

Semester : III Staff Handling: Dr.P.Loganthurai

Regulation : **2017**

AIM

To impart knowledge on the following Topics

OBJECTIVES

To impart knowledge on

(i) Magnetic-circuit analysis and introduce magnetic materials

(ii) Constructional details, the principle of operation, prediction of performance, the methods of testing the transformers and three phase transformer connections

(iii) Working principles of electrical machines using the concepts of electromechanical energy conversion principles and derive expressions for generated voltage and torque developed in all Electrical Machines

(iv) Working principles of DC machines as Generator types, determination of their noload/ load characteristics, starting and methods of speed control of motors.

(v) Various losses taking place in D.C. Motor and to study the different testing methods to arrive at their performance

COURSE OUTCOMES:

- Ability to analyze the magnetic-circuits
- Ability to acquire the knowledge in constructional details of transformers
- Ability to understand the concepts of electromechanical energy conversion
- Ability to acquire the knowledge in working principles of DC Generator
- Ability to acquire the knowledge in working principles of DC Motor
- Ability to acquire the knowledge in various losses taking place in D.C. Machines

CO	Course Outcomes	POs	PSOs
C204.1	Describe the coupled coil calculate the self and mutually induced emf	**1,2,5**	**1**
C204.2	Analyze the operation of transformer in different loading condition	**1,2,4,5**	**1**
C204.3	Explain the concept of field energy and co-energy in single and multiple excited systems	**1,2,5**	**1**
C204.4	Demonstrate the construction of D.C machines and operation of DC Generator	**1,2,5**	**1**
C204.5	Derive the performance equation of D.C motor under various load condition and analyze the braking system	**1,2,4,5**	**1**

S.No	Date	Period	Topics to be Covered	Book No [Page No]
UNIT I - MAGNETIC CIRCUITS AND MAGNETIC MATERIALS Target periods : 12				

1			Magnetic circuits –Laws governing magnetic circuits	3(12-16)
2			Simple and composite magnetic circuit	
3			Tutorial_1	
4			Self and mutual inductance, Flux linkage and energy	3(17-20)
5			Tutorial_2	
6			Statically and Dynamically induced EMF	3(30-34)
7			Torque, Properties of magnetic materials	3(25-27)
8			Tutorial_3	
9			Tutorial_4	
10			AC operation of magnetic circuits Hysteresis and Eddy Current losses	3(31-32) 3(33-35)
11			Tutorial_5	
12			Introduction to permanent magnets -Transformer as a magnetically coupled circuit	3(35-39)
13			Tutorial_6	
14			Quiz-I	
Total period			Assignment – 1 Date of Submission :	
UNIT II - TRANSFORMERS			**Target periods : 12**	
15			Construction , principle of operation -phasor diagrams. EMF Equation, Equivalent circuit parameters	3(54-62)2(2-4) 3(54-71)2(2-4)
16			Tutorial_1	
17			O.C&SC test Sumpner‘s test- test	3(71-91)
18			Tutorial_2	
19			Losses — efficiency voltage regulation per unit representation – inrush current	3(71-91)
20			Tutorial_3	
21			Three phase transformer connections, Scott Connection – Phasing of transformer	3(101-106) 3(124-125)
22			Tutorial_4	
23			Parallel operation of transformers	3(116-120)
24			Tutorial_5	
25			Tap changing on transformers	3(127-131)
26			Auto transformer	3(94-97)
27			Tutorial_6	
28			CBS	
29			Student seminar-I	
Total period			Assignment – 2 Date of Submission :	
UNIT III ELECTROMECHANICAL ENERGY CONVERSION AND CONCEPTS IN ROTATING MACHINES			**Target periods : 12**	
30			Energy in magnetic system, Field energy and co energy-force and torque equations	3(158-160) 3(161-172)
31			Tutorial_1	
32			Singly excited systems.	3(173-176)
33			Tutorial_2	
34			Multiply excited systems	3(173-176)
35			Tutorial_3	
36			MMF of distributed windings– Winding Inductances	3(216-223)
37			Tutorial_4	
38			Magnetic fields in rotating machines, Rotating MMF waves	3(223-239)

39			Tutorial_5	
40			Magnetic saturation and leakage fluxes	3(247-249)
41			Tutorial_6	
Total period			Assignment – 3 Date of Submission :	
UNIT IV - DC GENERATORS				Target periods :
42			Construction and Principle of operation of D.C.Generator	3(285-287)
43			Tutorial_1	
44			Lap and wave windings-EMF equations	3(287-302)
45			Tutorial_2	
46			Circuit model of DC Generators	3(305-307)
47			Tutorial_3	
48			Armature reaction, Commutation	3(310-324)
49			Tutorial_4	
50			Calculation of AT/P for De magnetizing and Cross Magnetizing effects	3(310-324)
51			Tutorial_5	
52			interlopes -compensating winding	3(316-318)
53			Characteristics of DC generators	3(326-329)
54			Tutorial_6	
55			Quiz-II	
Total period			Assignment – 4 Date of Submission :	
UNIT V – DC MOTORS				**Target periods : 12**
56			Principle and operations - types of DC Motors	3(285-287)
57			Tutorial_1	
58			Characteristics of Motors	3(361-367)
59			Tutorial_2	
60			Starting of DC motors, speed control DC motors	3(381-405)
61			Tutorial_3	
62			Plugging, dynamic and regenerative braking	3(408-410)
63			Methods of excitation	3(337-340)
64			Tutorial_4	
65			Retardation test- Swinburne‘s test	3(412-415)
66			Tutorial_5	
67			Hopkinson‘s test	3(419-421)
68			Tutorial_6	
69			Permanent magnet dc motors(PMDC)- DC Motor applications	3(426-429)
Total period			Assignment – 5 Date of Submission :	

Book Reference - Text Books

Sl	Title of the Book	Author	Publisher	Year
1.	Electric Machinery Fundamentals	Stephen J. Chapman	McGraw Hill Education Pvt. Ltd	2010.
2.	Principles of Electric Machines and Power Electronics’	P.C. Sen	John Wiley & Sons3rd Edition	2013
3.	Electric Machines	Nagrath, I.J. and Kothari, D.P	Tata McGraw Hill, Fourth Edition	2004

Book Reference – References

Sl	Title of the Book	Author	Publisher	Year
1.	Electrical Machines, Drives, and Power Systems	Theodore Wildi	Pearson Education., (5th Edition)	2002.

2.	Fundamental of Electric Machines	B.R. Gupta	New age International Publishers,3rd Edition ,	2015
3.	Electrical Machines	S.K. Bhattacharya	McGraw - Hill Education, New Delhi, 3rdEdition	2009
4	Basic Electric Machines	Vincent Del Toro	Pearson India Education	2016
5	Electrical Technology Machines & Measurements	Surinder Pal Bali	Pearson, Vol.II	2013
6	Electric Machinery'	Fitzgerald. A.E., Charles Kingsely Jr, Stephen D.Umans	McGraw Hill ,Sixth edition, Books Company,	2003

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C204.1	3	2	-	-	1	-	-	-	-	-	-	-	1	-	-
C204.2	3	2	-	2	1	-	-	-	-	-	-	-	2	-	-
C204.3	3	2	-	-	1	-	-	-	-	-	-	-	1	-	-
C204.4	3	2	-	-	1	-	-	-	-	-	-	-	1	-	-
C204.5	3	2	-	2	1	-	-	-	-	-	-	-	2	-	-
C204	3	2	-	1	1	-	-	-	-	-	-	-	1	-	-

Content Beyond Syllabus Added(CBS)	POs strengthened / vacant filled	CO / Unit
Assembling and testing of transformer	PO6,PO7 (vacant filled)PSO2(1) PO4 &PO5(strengthened)	C210.2/II C210.3 / III

Net Reference

http://nptel.iitm.ac.in/courses.php?branch=Electrical
www.freebookspot.com

Format No.:11
Issue No.: 02
Revision No.: 01
Date: 23/06/12

K.L.N. COLLEGE OF ENGINEERING, POTTAPALAYAM

LECTURE SCHEDULE

Degree/ Program	:	**B.E/ Electrical and Electronics Engineering**	Course code & Name	:	**EE8391- Electromagnetic Theory (C203)**
Duration	:	**June 2019 to Nov 2019**	Semester	:	**III**
Regulation	:	**2017**	Staff handling	:	**A.Marimuthu**

AIM : To expose the students to the fundamentals of electromagnetic fields and their applications to Electrical Engineering.

OBJECTIVES

- To introduce the basic mathematical concepts related to electromagnetic vector fields
- To impart knowledge on the concepts of
  - ✓ Electrostatic fields, electrical potential, energy density and their applications.
  - ✓ Magneto static fields, magnetic flux density, vector potential and its applications.
  - ✓ Different methods of emf generation and Maxwell's equations
  - ✓ Electromagnetic waves and characterizing parameters

Prerequisites: Mathematics, Physics

COURSE OUTCOMES: After the course, the student should be able to:

Course	Course Outcome	POs	PSOs
C203.1	Explain the different coordinate systems, and apply Gauss's law	**1,**	**1**
C203.2	Interpret the concepts of Electrostatic fields and apply boundary conditions on Electrostatic field	**2, 3,**	**1**
C203.3	Develop concepts of Magnetostatic fields and apply boundary conditions.	**4**	**1**
C203.4	Analyze the Maxwell's equations for electromagnetic fields		**1**
C203.5	Derive Electromagnetic wave equation and apply the Poynting expression.		**1**

S.No	Date	Period	Topics to be Covered	Book No [Page No]
UNIT I ELECTROSTATICS – I			**(Target Periods :6+6)**	
1.			Introduction, Sources and effects of electromagnetic fields	T1[3-19]
2.			Tutorial-1	
3.			Co-ordinate systems	T1[29-46]
4.			Tutorial-2	
5.			Vector fields , Gradient, Divergence and Curl, Theorem's and applications	T1[65-90]
6.			Tutorial-3	
7.			Coulomb's Law, Electric field intensity	T1[106-111]
8.			Tutorial-4	
9.			Field due to discrete and continuous charges	T1[113-124]
10.			Tutorial-5	
11.			Gauss's law and application	T1[124-134]
12.			Tutorial-6	
				Total Planned Periods:
			Assignment –I-DOS: *12/07/19*	
UNIT II ELECTROSTATICS – II			**(Target Periods : 6+6)**	
13.			Electrical potential	T1[135-144]
14.			Tutorial-1	
15.			Electric field and equipotential plots	T1[688-690]

16.			Tutorial-2	
17.			Uniform and Non-Uniform field, Utilization factor, Electric field in free space, conductors	T1[170-175]
18.			Tutorial-3	
19.			Electric field in Dielectric – dielectric polarization, Dielectric strength - Electric field in multiple dielectrics	T1[179-182]
20.			Tutorial-4	
21.			Boundary conditions, Poisson's and Laplace's equations	T1[190-198] T1[209-210]
22.			Tutorial-5	
23.			Capacitance, Energy density	T1[148-152] T1[233- 246]
24.			Tutorial-6	
25.			*Seminar- I*- Applications of Electrostatics	
Assignment –II-DOS:				
Total Planned Periods:				
UNIT III - MAGNETOSTATICS			**(Target Periods : 6+6)**	
26.			Magnetic field intensity (H)- Biot-savart's Law, H due to straight conductors and circular loop	T1[274- 282]
27.			Tutorial-1	
28.			Ampere's Circuit Law , H due to infinite sheet of current	T1[285- 288]
29.			Tutorial-2	
30.			Magnetic flux density (B),B in free space, conductor	T1[293- 294]
31.			Tutorial-3	
32.			Scalar and vector potential, Lorentz force	T1[296- 298] T1[319-322]
33.			Tutorial-4	
34.			Magnetic materials, Magnetization, Magnetic field in multiple media ,Boundary conditions, Inductance	T1[331- 353]
35.			Tutorial-5	
36.			Energy density, Magnetic force, Torque	T1[353- 361] T1[381- 382]
37.			Tutorial-6	
38.			*Seminar – II* - Applications of Magnetostatics	
Assignment –III-DOS:				
Total Planned Periods:				
UNIT IV - ELECTRODYNAMIC FIELDS			**(Target Periods: 6+6)**	
39.			Magnetic circuits	T1[361- 368]
40.			Tutorial-1	
41.			Faraday's laws	T1[386- 387]
42.			Tutorial-2	
43.			Transformer and motional EMF	T1[388- 391]
44.			Tutorial-3	
45.			Displacement current	T1[397- 399]
46.			Tutorial-4	
47.			Maxwell's equations (differential and integral forms)	T1[400- 402]

48.			Tutorial-5	
49.			Relation between field theory and circuit theory, Applications	Material
50.			Tutorial-6	
				Total Planned Periods:
			Assignment –IV-DOS:	
UNIT V - ELECTROMAGNETIC WAVES				**(Target Periods : 6+6)**
51.			Electromagnetic wave Generation and equations	T1[430- 432]
52.			Tutorial-1	
53.			Wave parameters – velocity – intrinsic impedance – propagation constant	T1[436- 437]
54.			Tutorial-2	
55.			Waves in Lossy dielectrics	T1[436- 445]
56.			Tutorial-3	
57.			Waves in free space, lossless dielectrics – conductors-skin depth	T1[436- 445]
58.			Tutorial-4	
59.			Poynting vector	T1[454- 458]
60.			Tutorial-5	
61.			Plane wave reflection and refraction	T1[459- 462]
62.			Tutorial-6	
63.			*Content Beyond Syllabus:* Electromagnetic Interference (EMI)	
64.			NPTEL video Lecture	
65.			Quiz	
				Total Planned Periods:
			Assignment –V-DOS:	
			NPTEL Website: http://nptel.ac.in/courses/115101005/ http://nptel.ac.in/courses/108104087/	

Text /Reference Book

S.No	Title of the Book	Author	Publisher	Year
T1	Elements of Electromagnetics	Mathew N.O .Sadiku	Oxford University Press	2015
T2	Engineering Electromagnetics	William H. Hayt	Tata McGraw Hill	2014
T3	Electromagnetics with applications	Kraus and Fleish	McGraw-Hill	2010
R1	Electromagnetic fields and waves	V.V.Sarwate	Newage Publishers	1993
R2	Engineering Electromagnetics - Theory, Problems and Applications	J.P.Tewari	Khanna Publishers	
R3	Schaum's Series Theory and Problems of Electromagnetics, Second Edition	Joseph A. Edminister	Tata McGraw-Hill	2010
R4	Electromagnetic Field Theory	S.P.Ghosh, Lipika Datta	Tata McGraw-Hill	2012
R5	Electromagnetic Field Theory	K.A. Gangadhar, P.M. Ramanthan	Khanna Publications	2015

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3

C203.1	3	3	-	-	-	-	-	-	-	-	-	-	2	-	-
C203.2	3	3	-	1	-	-	-	-	-	-	-	-	2	-	-
C203.3	3	3	1	1	-	-	-	-	-	-	-	-	2	-	-
C203.4	3	3	1	1	-	-	-	-	-	-	-	-	2	-	-
C203.5	3	3	1	-	-	-	-	-	-	-	-	-	2	-	-
C203	3	3	1	1	-	-	-	-	-	-	-	-	2	-	-

content Beyond Syllabus Added(CBS)	s	it
Electromagnetic Interference (EMI)	PO6 (**2**)	V

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80130

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Third Semester

Electrical and Electronics Engineering

EE 8391 — ELECTROMAGNETIC THEORY

(Regulation 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the condition for the vector F to be solenoidal.
2. What are the sources of electric field and magnetic field?
3. Why water has much greater dielectric constant than mica?
4. What are the significant physical differences between Poisson's and Laplace's equations?
5. State Gauss law for magnetic field.
6. State the conservative property of electric field.
7. What is the effect of permittivity on the force between two charges?
8. What is main effect of eddy current?
9. Mention the properties of uniform plane wave.
10. Define Poynting vector.

PART B — (5 × 13 = 65 marks)

11. (a) Express vector $\overline{B}$ in cartesian and cylindrical coordinate systems. Given $\overline{B} = \frac{10}{r}\overline{a}_r + r\cos\theta\,\overline{a}_\theta + \overline{a}_\varphi$ then find $\overline{B}$ at (–3, 4, 0) and $(5, \pi/2, -2)$.

Or

(b) A charge of 1 C is at (2, 0, 0). What charge must be placed at (–2, 0, 0) which will make y component of total $\overline{E}$ zero at the point (1, 2, 2)?

12. (a) Consider an infinite line charge with density ρ_L C/m, along z-axis. Obtain the work done if a point charge Q is moved from r = a to r = b along a radial path.

Or

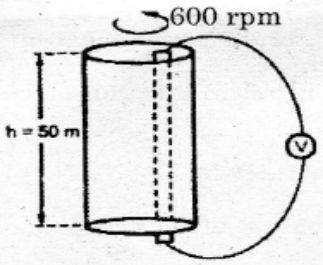
(b) $V = x - y + xy + zV$, find $\overline{E}$ at (1, 2, 4) and the electrostatic energy stored in a cube of side 2 m centered at the origin.

13. (a) A 'z' directed current distribution is given by, $\overline{J} = (r^2 + ur)$ for $r \le a$. Find $\overline{B}$ at any point $r \le a$ using Ampere's circuital law.

Or

(b) A circular loop of radius r and current I lies in z = 0 plane. Find the torque which results if the current is in $\overline{a}\,\phi$ and there is a uniform field $\overline{B} = \frac{B_0}{\sqrt{2}}\left(\overline{a}_x + \overline{a}_z\right)T$.

14. (a) A conducting cylinder of radius 7 cm and height 50 cm rotates at 600 rpm in a radial field $\overline{B} = 0.10\,\overline{a}_r\,T$. Sliding contacts at the top and bottom are used to connect a voltmeter as shown in the figure. Calculate induced voltage.



Or

(b) A parallel plate capacitor with plate area of $5\,cm^2$ and plate separation of 3 mm has voltage 50 sin 103t V applied to its plates. Calculate displacement current assuming $\varepsilon = 2\varepsilon_0$.

15. (a) Explain in detail the behavior of plane waves in lossless medium.

Or

(b) Starting from Maxwells equations derive the expression for Poynting vector and explain its significance.

PART C — (1 × 15 = 15 marks)

16. (a) Find the capacitance of conducting sphere of 2 cm in diameter, covered with a layer of polyethelene with $\epsilon_r = 2.26$ and 3 cm thick.

Or

(b) The region between two concentric right circular cylinders contains a uniform charge density ρ. Solve the Poisson's equation for the potential in the region.

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80125

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Third Semester

Electrical and Electronics Engineering

EE 8301 — ELECTRICAL MACHINES – I

(Regulation 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write down the expression for reluctance. What is its unit?

2. Why the operating point of the magnetic systems is not selected in the saturation zone of the B-H characteristic?

3. If a transformer has 50 turns in the primary winding and 10 turns in the secondary winding, what is the reflective resistance if the secondary load resistance is 250 Ω?

4. A certain transformer has a turns ratio of 1 and a coupling coefficient of 0.85. When 2 V ac is applied to the primary, what is the secondary voltage?

5. Calculate the hourly loss of energy in kWh in a specimen of iron, the hysteresis loop of which is equivalent in area to 250 J/m^3. Frequency 50 Hz; specific gravity of iron 7.5; weight of specimen 10 kg.

6. What are the categories of electromechanical energy conversion devices?

7. On what occasions dc generators may not have residual flux?

8. How the critical field resistance of a dc shunt generator is estimated from its OCC?

9. Enumerate the factors on which the speed of a dc motor depends.

10. How will you change the direction of rotation of a d.c motor?

PART B — (5 × 13 = 65 marks)

11. (a) A cylinder of iron or volume $8\times10^{-3}m^3$ revolves for 20 minutes at a speed 3000 rpm in a two pole field of flux density 0.8 Wb m^2. If the hysteresis coefficient of iron is 753.6 joule/m^3, specific heat of iron is 0.11, the loss due to eddy current is equal to that due to hysteresis and 25% of the heat produced is lost by radiation, find the temperature rise of iron. Take density of iron as 7.8×10^3 kg/m^3.

Or

(b) The magnetic core in figure 11(b) is made from laminations of M-5 grain-oriented electrical steel. The winding is excited with a 60 Hz voltage to produce a flux density in the steel of B = 1.5 sin wt T, where $w = 2\pi 60$ rad/sec. The steel cccupies 0.94 of the core cross-sectional area. The mass-density of the steel is 7.65 g/cm^3. Find :

(i) the applied voltage,

(ii) the peak current,

(iii) the rms exciting current, and

(iv) the core loss.

The magnetic field intensity corresponding to Bmax = 1.5 T is Hmax = 36A turns/m.

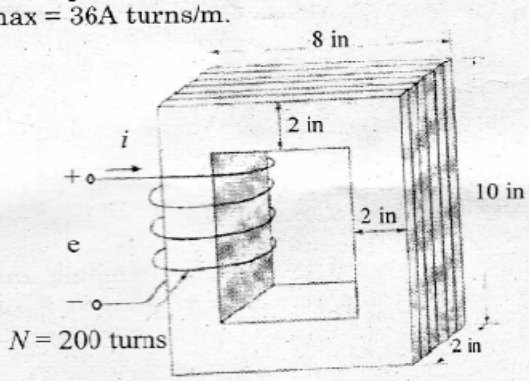


Fig.11(b)

12. (a) A 50-kVA 2400:240-V 60-Hz distribution transformer has a leakage impedance of 0.72 + j 0.92 Ω in the high-voltage winding and 0.0070 + j 0.0090 Ω in the low-voltage winding. At rated voltage and frequency, the impedance of the shunt branch accounting for the exciting current is 6.32 + j 43.7 Ω when viewed from the low-voltage side. Draw the equivalent circuit referred to

(i) the high-voltage side and

(ii) the low-voltage side, and label the impedances numerically. The transformer is used to step down the voltage at the load end of a feeder whose impedance is 0.30 + j 1.60 Ω. The voltage at the sending end of the feeder is 2400 V. Find the voltage at the secondary terminals of the transformer when the load connected to its secondary draws rated current from the transformer and the power factor of the load is 0.80 lagging. Neglect the voltage drops in the transformer and feeder caused by the exciting current.

Or

(b) For the transformer of single phase, 5 kVA, 200V/400V, 50Hz, the equivalent circuit is shown in figure 12(b), calculate the following :

(i) the efficiency of the transformer at 75% loading with load power factor = 0.7

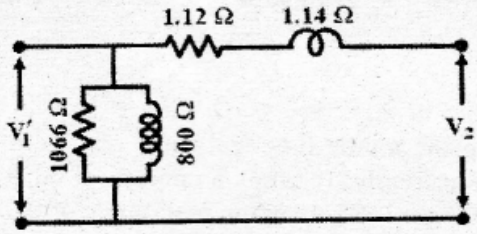


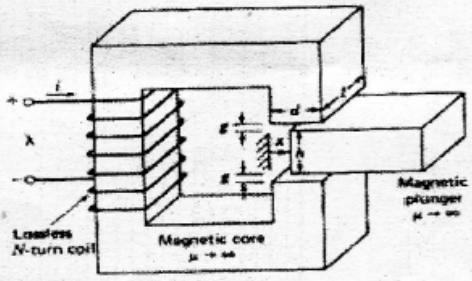
fig.12(b)

(ii) At what load or kVA the transformer will be operated at maximum efficiency? Also calculate the value of maximum efficiency.

(iii) The regulation of the transformer at full load 0.8 power factor lag.

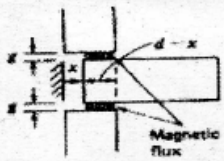
(iv) What should be the applied voltage to the LV side when the transformer delivers rated current at 0.7 power factor lagging, at a terminal voltage of 400 V?

13. (a) Sketch $L(x)$ and calculate the induced emf in the excitation coil for a linear actuator shown figures. Fig.13(a)-(i) & (ii).



(a)

fig.13(a)-(i)



(b)

fig.13(b)-(ii)

Or

(b) Derive Force and Torque from Energy and Co-energy for the following Electromechanical conversion systems :

(i) Singly Excited Linear Actuator and

(ii) Singly Excited Rotating Actuator.

14. (a) A 200 V, d.c shunt machine has an armature resistance of 0.5 Ω and field resistance of 200 Ω. The machine is running at 1000 rpm as a motor drawing 31 A from the supply mains. Calculate the speed at which the machine must be driven to achieve this as generator.

Or

(b) Derive the relation for induced emf in the dc generator from the fundamental principle.

15. (a) A 220 V shunt motor has armature and field resistances of 0.2 Ω and 220 Ω respectively. The motor is driving load torque, $T_L \propto n^2$ and running at 1000 rpm drawing 10 A current from the supply. Calculate the new speed and armature current if an external armature resistance of value 5 Ω is inserted in the armature circuit. Neglect armature reaction and saturation.

Or

(b) A 220 V d.c series motor has armature and field resistances of 0.15 Ω and 0.10 Ω respectively. It takes a current of 30 A from the supply while running at 1000rpm. If a diverter resistance of 0.2 Ω is connected across the field coil of the motor, calculate the new steady state armature current and the speed. Assume the load torque remains constant.

PART C — (1 × 15 = 15 marks)

16. (a) In the magnetic circuit detailed in Figure 16(a)-(i) with all dimensions in mm, calculate the required current to be passed in the coil having 200 turns in order to establish a flux of 1.28 mWb in the air gap. Neglect fringing effect and leakage flux. The B-H curve of the material is given in Figure 16(b)-(ii). Permeability of air may be taken as, $\mu_0 = 4\pi \times 10^{-7} H/m$.

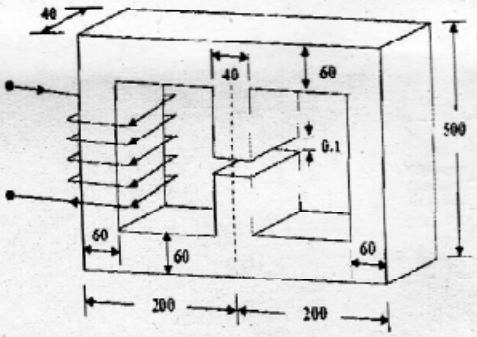


fig.16(a)-(i)

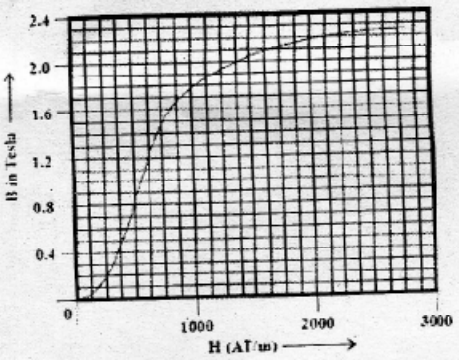


fig.16(b)-(ii)

Or

(b) A 3-phase, 500 kVA, 6000V/400V, 50Hz, delta-star connected transformer is delivering 300 kW, at 0.8 pf lagging to a balanced 3-phase load connected to the LV side with HV side supplied from 6000 V. 3-phase supply. Calculate the line and winding currents in both the sides. Assume the transformer to be ideal.

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Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80235

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Third Semester

Electrical and Electronics Engineering

ME 8792 — POWER PLANT ENGINEERING

(Regulation 2017)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. When a boiler is said to be supercritical boiler?
2. Why the preparation of coal is necessary?
3. List the various thermodynamic processes involved in Otto cycle.
4. State the merit and demerit of use of Mercury as working fluid in binary cycle power plants.
5. What is breeding in nuclear reactor?
6. What is the purpose of reprocessing of nuclear waste?
7. Mention few turbines that are widely used in hydro-electric power stations.
8. State the function of 'dyke' and 'sluice ways' refers in tidal power plants.
9. What do you understand by the term tariff?
10. What is Thermal Discharge Index (TDI)?

PART B — (5 × 13 = 65 marks)

11. (a) Explain how the Rankine cycle efficiency is improved when increasing the pressure of steam and reducing the condenser pressure.

Or

(b) What is Fluidised Bed Combustion (FBC)? Describe the function of bubbling Fluidised bed boiler. (3 + 10)

12. (a) What is Brayton cycle? Using a schematic of closed cycle gas turbine engine, discuss the thermodynamic processes of Brayton cycle and then arrive the efficiency expression.

Or

(b) (i) What is IGCC? Discuss the benefits of IGCC plant over pulverized coal-fired power plants. (6)

(ii) List out the advantages of combined gas and steam cycle power generation. (7)

13. (a) (i) List the desirable properties of a moderator and a coolant. (6)

(ii) Draw a schematic of a direct-cycle BWR plant and discuss its function. (7)

Or

(b) What does Liquid Metal Fast Breeder Reactor (LMFBR) mean? Discuss the working principle of LMFBR.

14. (a) (i) List the various advantages and disadvantages of hydro-electric power stations. (8)

(ii) What is low head hydro power plant? Explain its function. (5)

Or

(b) Show and explain the different layers in the cross section of the earth. Also explain the hydrothermal based geothermal source.

15. (a) The following loads are connected to a power plant:

Type of load	Max. demand (MW)	Diversity factor	Demand factor
Domestic	15	1.25	0.70
Commercial	25	1.20	0.90
Industrial	50	1.30	0.98

If overall diversity factor is 1.5, determine the

(i) maximum load and

(ii) connected load of each type.

Or

(b) Discuss the issues of various gases that are released into the atmosphere from diesel engine power plant.

PART C — (1 × 15 = 15 marks)

16. (a) A power station has to supply load as follows:

Time (hours)	0-6	6-12	12-14	14-18	18-24
Load (MW)	30	90	60	100	50

(i) Draw the load curve

(ii) Draw the load duration curve

(iii) Select suitable generating units to supply the load

(iv) Calculate the load factor

(v) Calculate the capacity of the plant and the plant capacity factor.

Or

(b) A steam power plant uses the following cycle:

Steam at boiler outlet –150 bar, 550°C

Reheat at 40 bar to 550°C

Condenser at 0.1 bar

Using the Mollier chart and assuming ideal processes, find the

(i) quality at turbine exhaust,

(ii) cycle efficiency and

(iii) steam rate.

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Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80126

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Third Semester

Electrical and Electronics Engineering

EE 8351 — DIGITAL LOGIC CIRCUITS

(Common to Electronics and Instrumentation Engineering/Instrumentation and Control Engineering)

(Regulation 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Convert $(101.01)_2$ to decimal number.

2. Give each one example for error detecting code and error correcting code.

3. Determine the exact number of half adders and full adders required for performing the addition of two binary numbers of 5-bits length each.

4. Find the result of $A + A'D + AC'$.

5. Write down the characteristic table of JK flip-flop.

6. What is FSM? List its two basic types.

7. Define metastable state.

8. Draw the structure of PAL.

9. State the purpose of test bench.

10. Write a VHDL program for an EX-NOR gate using behavioural coding.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Design a 3-input NAND gate circuit using TTL logic. (7)

(ii) Explain in detail, the generation of Hamming code for 4-bit data. (6)

Or

(b) (i) Design a 2 input NOR gate using CMOS logic. (7)

(ii) Explain the operation of RTL inverter circuit with relevant diagrams. (6)

12. (a) (i) Design a 3×8 decoder using 2×4 decoders. Draw the truth table. (7)

(ii) Design a full adder circuit using logic gates. (6)

Or

(b) (i) Simplify and implement the logic function $F(A, B, C) = \Sigma(0, 1, 4, 5, 7)$ using logic gates. (7)

(ii) Design a 4×2 priority encoder using logic gates. (6)

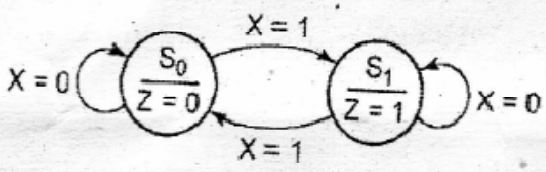
13. (a) (i) Design a 2-bit synchronous sequential down counter. (7)

(ii) Explain the operation of a 3-bit universal shift register. (6)

Or

(b) (i) Explain Moore and Mealy models with the help of block diagrams. (7)

(ii) Draw the state table for the following state diagram. (6)



14. (a) (i) Design a Modulo-6 asynchronous binary up-counter. (7)

(ii) Implement the functions $F_1(X, Y, Z) = \Sigma(1, 2, 4, 5)$, $F_2(X, Y, Z) = \Sigma(0, 1, 3, 4)$ and $F_3(X, Y, Z) = \Sigma(2, 3, 6, 7)$ using a single PROM grid. (6)

Or

(b) (i) Differentiate PAL and PLA implementations with the help of the same example $F_2(a, b, c) = \Sigma(0, 1, 3, 4, 6, 7)$. (7)

(ii) Explain the structure of CPLD with the help of a block diagram. (6)

15. (a) (i) Draw the VLSI design flow chart used for IC design and fabrication. (7)

(ii) Write down a VHDL code for 8×1 Demultiplexer. (6)

Or

(b) (i) Illustrate the two approaches used in VHDL coding with full adder design as your example. (7)

(ii) What are components in VHDL? Show step-by-step how a NOR gate component can be created and added in the library. (6)

PART C — (1 × 15 = 15 marks)

16. (a) Design a synchronous sequential logic circuit that goes through the sequence 0, 2, 4, 6, 8, 10, 12,14 repeatedly. Use D flip flops for your design. (15)

Or

(b) Simplify the following function and implement it using NAND gates only:

$F(w,x,y,z) = \Sigma(1,3,5,7,9,11,13,15)$, with don't care states

$d(w,x,y,z) = \Sigma(0,2,4,6,8)$. (15)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80214

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Third Semester

MA 8353 – TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS

(Common to Aeronautical Engineering/Agriculture Engineering/Automobile Engineering/Civil Engineering/Electrical and Electronics Engineering/Electronics and Instrumentation Engineering/Industrial Engineering/Industrial Engineering and Management/Instrumentation and control Engineering/Manufacturing Engineering/Marine Engineering/Material Science and Engineering/Mechanical Engineering/Mechanical Engineering(Sandwich)/Mechanical and Automation Engineering/Mechatronics Engineering/Production Engineering/Robotics and Automation Engineering/Biotechnology/Chemical and Electrochemical Engineering/ Food Technology/Pharmaceutical Technology)

(Regulation 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Form the partial differential equation from the equation $2z = \frac{x^2}{a^2} - \frac{y^2}{b^2}$.

2. If $u = x^2 + t^2$ is a solution of $c^2 \frac{\partial^2 u}{\partial x^2} = \frac{\partial^2 u}{\partial t^2}$, then find the value of c ?

3. State giving reasons whether the function $f(x) = x \sin\left(\frac{1}{x}\right)$ can be expanded in Fourier series in the interval of $(0, 2\pi)$.

4. Sketch the graph of one even and one odd extension of $f(x) = x^3$ in $[0, 1]$.

5. Classify the PDE $3\frac{\partial^2 z}{\partial x^2} - 4\frac{\partial^2 z}{\partial x \partial y} + \frac{\partial^2 z}{\partial y^2} = 0$.

6. Write all three possible solutions of one dimensional heat equations.

7. State convolution theorem for Fourier transform.

8. State the condition for the existence of Fourier cosine and sine transforms of derivatives.

9. The integers 0, 1, 1, 2, 3, 5, 8, ... are said to form a Fibonacci sequence. Model the Fibonacci difference equation (no need to solve)

10. Find Z-transform of unit impulse sequence $\delta(n)=\begin{cases}1, & n=0\\ 0, & n\neq 0\end{cases}$.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Solve $\frac{\partial^3 z}{\partial x^3}-2\frac{\partial^3 z}{\partial x^2\partial y}=2e^{2x}+3x^2y$.

(ii) Solve $x^2(y-z)p+y^2(z-x)q=z^2(x-y)$, where $p=\frac{\partial z}{\partial x}$, $q=\frac{\partial z}{\partial y}$. (8 + 8)

Or

(b) (i) Solve $\frac{\partial^2 z}{\partial x^2}+\frac{\partial^2 z}{\partial x\partial y}-6\frac{\partial^2 z}{\partial y^2}=y\cos x$.

(ii) Solve $(x^2-yz)p+(y^2-zx)q=z^2-xy$ where $p=\frac{\partial z}{\partial x}$, $q=\frac{\partial z}{\partial y}$. (8 + 8)

12. (a) Find the Fourier series expansion of $f(x)=\sqrt{1-\cos x}$, $0\le x\le 2\pi$ and hence evaluate the value of the series $\frac{1}{1.3}+\frac{1}{3.5}+\frac{1}{5.7}-\ldots$

Or

(b) The displacement $y(x)$ of a part of a mechanism is tabulated with corresponding angular movement $x°$ of the crank. Express $y(x)$ as a Fourier series neglecting the harmonics above the third.

$x°$:	0	30	60	90	120	150	180	210	240	270	300	330
$y(x)$:	1.8	1.1	0.3	0.16	0.5	1.3	2.16	1.25	1.3	1.52	1.76	2

13. (a) (i) Using the method of separation of variables, solve $\frac{\partial u}{\partial x}=2\frac{\partial u}{\partial t}+u$ where $u(x,0)=6e^{-3x}$.

(ii) Solve the equation $\frac{\partial u}{\partial t}=\frac{\partial^2 u}{\partial x^2}$ with boundary conditions $u(x,0)=3\sin\pi x$, $u(0,t)=0$ and $u(1,t)=0$ where $0<x<1$, $t>0$. (8 + 8)

Or

(b) (i) Solve using by the method of separation of variables $\frac{\partial^2 z}{\partial x^2} - 2\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} = 0$.

(ii) A tightly stretched flexible string has its ends fixed at $x = 0$ and $x = L$. At time $t = 0$, the string is given a shape defined by $y = \mu x(L - x)$, where μ is a constant, and then released. Find the displacement of any point x of the string at any time $t > 0$. (8 + 8)

14. (a) Find the Fourier transform of $e^{-a^2x^2}$, $a > 0$. By using the properties, find the Fourier transform of $e^{-2(x-3)^2}$. (10 + 6)

Or

(b) Using Parseval's identities, prove that

(i) $\int_0^\infty \frac{dt}{(a^2 + t^2)(b^2 + t^2)} = \frac{\pi}{2ab(a + b)}$ (ii) $\int_0^\infty \frac{t^2 dt}{(t^2 + 1)^2} = \frac{\pi}{4}$. (8 + 8)

15. (a) Find the inverse Z-transform of

(i) $\frac{2z^2 + 3z}{(z + 2)(z - 4)}$ (ii) $\frac{2(z^2 - 5z + 6.5)}{(z - 2)(z - 3)^2}$ for $2 < |z| < 3$. (6 + 10)

Or

(b) Using the Z-transform, solve

(i) $u_{n+2} + 4u_{n+1} + 3u_n = 3^n$ with $u_0 = 0$, $u_1 = 1$

(ii) $u_{n+2} - 2u_{n+1} + u_n = 3n + 5$. (8 + 8)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80113

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Third Semester

Biomedical Engineering

EC 8353 — ELECTRON DEVICES AND CIRCUITS

(Common to Computer and Communication Engineering/Electrical and Electronics Engineering/Electronics and Instrumentation Engineering/Instrumentation and Control Engineering/Robotics and Automation Engineering)

(Regulation 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Determine the peak output voltage of a half wave rectifier, if the diode has $V_F = 0.7V$ and the ac input is 22 V.

2. List few applications of lacer diode.

3. FET has lower thermal noise than BJT — Justify.

4. What is meant by latching in SCR?

5. An NPN common emitter amplifier circuit has the following parameters. $h_{fe} = 50$, $h_{ie} = 1k\,\Omega$ and $R_C = 3.3k\,\Omega$. Find the voltage gain of the amplifier.

6. State the need for coupling capacitor in a transistor amplifier.

7. Determine the input impedance of a differential amplifier (emitter coupled) with $R_B = 3.9k\Omega$ and $Z_B = 2.4k\Omega$.

8. A single tuned amplifier provides a bandwidth of 10kHz at a frequency of 1MHz. Find the circuit Q.

9. What is the condition required for satisfactory operation of a negative feedback amplifier?

10. An oscillator operating at 1 MHz has a stability of 1 in 10^4. What will be the minimum value of frequency generated?

PART B — (5 × 13 = 65 marks)

11. (a) Outline the charge carrier diffusion phenomenon across a PN junction. Explain the effect of forward and reverse biasing on the depletion region. (13)

Or

(b) Explain the principle and operation of Light Emitting Diode (LED) with necessary expressions for current densities and efficiency of light generation. (13)

12. (a) (i) Brief about the operation of an N channel depletion type MOSFET with a neat diagram. (5)

(ii) Enumerate the characteristics of N channel depletion MOSFET with suitable graphs. (8)

Or

(b) Outline the structure of a SCR and explain its operation. Also illustrate its V- I characteristics. (13)

13. (a) (i) Draw the circuit of a CE amplifier with DC sources eliminated and deduce the small signal model for amplifier operation. (8)

(ii) Illustrate the steps involved in analyzing a BJT amplifier circuit using small signal model. (5)

Or

(b) (i) Explain the high frequency MOSFET model under CS configuration and its simplified equivalent circuit. (5)

(ii) Derive an expression for MOSFET unity gain frequency (f_T) (8)

14. (a) (i) With a neat circuit, outline the operation of a basic BJT differential pair configuration, under common mode input signal. (8)

(ii) Deduce expressions for Emitter currents in a differential amplifier under large signal operation. (5)

Or

(b) Illustrate the behavior of a MOSFET based amplifier circuit with tuned load. Also deduce expressions for voltage gain at centre frequency, Q and bandwidth. (13)

15. (a) With proper mathematical derivations, Prove that bandwidth increases and output resistance reduces in a negative feedback amplifier. Assume a series shunt feedback scheme. (13)

Or

(b) Outline the principle of LC tuned oscillators. With a neat circuit diagram deduce the necessary condition for oscillation and expression for oscillation frequency in the case of Colpitt's oscillator. (13)

PART C — (1 × 15 = 15 marks)

16. (a) An electronic load requires a constant 6.8 V DC for operation. However the supply voltage available is 10 V±1V. The load resistance is 2 KΩ. Design a simple shunt circuit with appropriate components to maintain the load voltage of 6.8V. Choose a proper device and justify your choice, by indicating its characteristics The circuit diagram for the entire operation should also be provided. (15)

Or

(b) Provide a circuit that can amplify AM Radio signals at 800 KHz. The signals occupy a bandwidth of 10 kHz and should be provided a gain of 100. Justify the choice of the circuit and explain the operation of the circuit. (15)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 25141

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Civil Engineering

MA 8353 – TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS

(Common to: Electrical and Electronics Engineering / Industrial Engineering and Management / Chemical and Electrochemical Engineering / Aeronautical Engineering / Agriculture Engineering / Automobile Engineering / Electronics and Instrumentation Engineering / Industrial Engineering / Instrumentation and Control Engineering / Manufacturing Engineering / Marine Engineering / Material Science and Engineering / Mechanical Engineering / Mechanical Engineering (Sandwich) / Mechanical and Automation Engineering / Mechatronics Engineering / Production Engineering / Robotics and Automation Engineering / Bio Technology/ Food Technology and Pharmaceutical Technology)

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are singular integrals? How does it differ from particular integral?

2. Solve $2\frac{\partial^2 z}{\partial x^2} + 5\frac{\partial^2 z}{\partial x \partial y} + 2\frac{\partial^2 z}{\partial y^2} = 0$.

3. What is the behavior of Fourier series of a function $f(x)$ at the point of discontinuity?

4. Sketch the even and odd extensions of the periodic function $f(x) = x^2$ for $0 < x < 2$.

5. Classify the partial differential equation $2x\frac{\partial^2 u}{\partial x^2} + 4x\frac{\partial^2 u}{\partial x \partial y} + 8x\frac{\partial^2 u}{\partial y^2} = 0$

6. Mention the various possible general solutions for one dimensional heat equation.

7. Does Fourier sine transform of $f(x) = k, 0 \le x \le \infty,$, exist? Justify your answer.

8. State convolution theorem for Fourier transforms.

9. What are the applications of Z-Transform?

10. Find the Z transform of $f(n) = (n+1)^2$.

PART B — ($5 \times 16 = 80$ marks)

11. (a) (i) Form the partial differential equation by eliminating the arbitrary function from $f(x^2 + y^2,\ z - xy) = 0$. (8)

(ii) Find the solution of the partial differential equation

$$\frac{\partial^2 z}{\partial x^2} - 4x\frac{\partial^2 z}{\partial x \partial y} + 4\frac{\partial^2 z}{\partial y^2} = e^{2x+y}. \quad (8)$$

Or

(b) (i) Solve the Lagrange's linear equation

$$(x^2 - yz)\,p + (y^2 - zx)\,q = z^2 - xy. \quad (8)$$

(ii) Solve the partial differential equation

$$(D^2 + 2DD' + D'^2 - 2D - 2D')z = \sin(x + 2y). \quad (8)$$

12. (a) (i) Obtain the Fourier series of the periodic function $f(x) = e^{ax}$ in the interval $0 \le x \le 2\pi$. (8)

(ii) Develop the Fourier series for the function $f(x) = \begin{cases} 1 + \frac{2x}{\pi}, & -\pi \le x \le 0 \\ 1 - \frac{2x}{\pi}, & 0 \le x \le \pi \end{cases}$.

Hence deduce that $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \ldots = \frac{\pi^2}{8}$. (8)

Or

(b) (i) Find the complex form of the Fourier series for $f(x) = e^{-x}$, in $-1 \le x \le 1$. (8)

(ii) Develop the half range Fourier series for the function $f(x) = x^3$ in $(0, L)$. (8)

13. (a) (i) Using the method of separation of variables solve $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$, where $u(x, 0) = 6e^{-3x}$. (8)

(ii) Find the temperature $u(x,t)$ in a laterally insulated heat conducting bar of length L with its ends kept at 0° and with the initial temperature in the bar is $u(x,0) = 100\sin\left(\frac{\pi x}{80}\right)$ and $L = 80$ *cm*. (8)

Or

(b) (i) Derive the general solutions for one dimensional wave equation $\frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2}$ using separation of variables method. (8)

(ii) Find the displacement of a string stretched between two fixed points at a distance L apart. The string is initially at rest in equilibrium position and points of the string are given initial displacement $u(x, 0) = k(Lx - x^2)$. Assume initial velocity zero. (8)

14. (a) (i) Find the Fourier transform of $f(x) = \begin{cases} 1 - x^2, & |x| \le 1 \\ 0, & |x| \ge 1 \end{cases}$. Hence deduce $\int_0^\infty \frac{x \cos x - \sin x}{x^3} \cos\left(\frac{x}{2}\right) dx$. (10)

(ii) Construct the Fourier sine transform of $f(x) = \frac{e^{-ax}}{x}$. (6)

Or

(b) (i) Find the Fourier cosine transforms of $f(x) = e^{-ax}$ and $g(x) = e^{-bx}$. Using these transforms and Parseval's identity show that $\int_0^\infty \frac{dt}{(a^2 + t^2)(b^2 + t^2)} = \frac{\pi}{2ab(a + b)}$. (10)

(ii) Find the Fourier transform of $f(x) = \cos x$, $0 \le x \le 1$. (6)

15. (a) (i) Form the difference equation corresponding to the family of curves $y = ax + bx^2$. (8)

(ii) Find the Z transform of $u(n) = 3n - 4 \sin\left(\frac{n\pi}{4}\right) + 5a$, and $u(n) = \cos\left(\frac{n\pi}{2} + \frac{\pi}{4}\right)$. (8)

Or

(b) (i) Use convolution theorem to evaluate the inverse Z transform of $U(z) = \frac{z^2}{(z - a)(z - b)}$. (6)

(ii) Solve the difference equation $y_{n+2} + 6y_{n+1} + 9y_n = 2^n$ with initial conditions $y_0 = y_1 = 0$, using Z transform. (10)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 25087

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Electrical and Electronics Engineering

EE 8391 — ELECTROMAGNETIC THEORY

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Convert the given point $(2, \pi/2, \pi/3)$ in Spherical coordinates into Cartesian coordinates.

2. Determine the electric flux density at a distance of 20 cm due to an infinite sheet of uniform charge $20\mu C/m^2$ lying on the $z = 0$ plane.

3. Why the direction of electric field is always normal to equipotential surface?

4. Evaluate the capacitance of a single isolated sphere of 1.5m diameter in free space.

5. Give the force on a current element.

6. Write down the steps to calculate inductance of various shapes.

7. How does displacement current different from conduction current?

8. Compare field theory with circuit theory.

9. Calculate the characteristic impedance of free space.

10. State Poynting theorem.

PART B — (5 × 13 = 65 marks)

11. (a) Express the vector $\vec{B}$ in Cartesian and cylindrical systems. Given $\vec{B} = 10/r\vec{a}_r + r\cos\theta\,\vec{a}_\theta + \vec{a}_\varphi$, then find $\vec{B}$ at $(-3,4,0)$ and $(5,\pi/2,-2)$. (13)

Or

(b) (i) Write down the expressions for gradient, divergence, and curl in three co-ordinate systems. (9)

(ii) Point charges 5nC and –2nC are located at (2,0,4) and (-3,0,5), respectively. (1) Determine the force on a 1nC point charge located at (1,–3,7). (2) Find the electric field intensity at (1,-3,7). (4)

12. (a) Define the following :

(i) Electric potential and potential difference (2)

(ii) Uniform and non uniform fields with examples (4)

(iii) Dielectric polarization and Dielectric Constant (4)

(iv) Capacitance and expression for energy stored in the capacitor (3)

Or

(b) (i) State and derive electric boundary condition for (1) a dielectric to dielectric medium, (2) a conductor to dielectric medium, and (3) free space to conductor. (10)

(ii) Obtain poisson's equation from the point form of Gauss's law in free space. (3)

13. (a) Show by means of Biot-Savart's law that the flux density produced by an infinitely long straight wire carrying a current 'I' at any point distant 'ρ' normal to the wire is given by $\frac{\mu_0\mu_r I}{2\pi\rho}$. (13)

Or

(b) Derive the expressions for Biot-Savart Law and Ampere's circuit law from the concept of magnetic vector potential and also derive Poisson's equation for magneto static field. (13)

14. (a) Derive and explain the Maxwell's equations in Integral and differential forms. (13)

Or

(b) (i) A parallel-plate capacitor with plate area of 5 cm^2 and plate separation of 3 mm has a voltage 50 sin 10^3t V applied to its plates. Calculate the displacement current assuming $\varepsilon = 2\varepsilon_0$. (5)

(ii) Explain how the circuit equation for a series RLC circuit is derived from the field relations. (8)

15. (a) Define wave. Derive the wave equation in terms of electric and magnetic fields for a conducting medium. (13)

Or

(b) A uniform plane wave of a damp soil has $\sigma = 20 \times 10^{-3}\ S/m, \varepsilon = 2\varepsilon_0$ is and $\mu = \mu_0$ having a Frequency of 1MHZ.

(i) Test the type of material.

(ii) Calculate the following,

(1) Attenuation constant

(2) Phase constant

(3) Propagation constant

(4) Intrinsic impedance

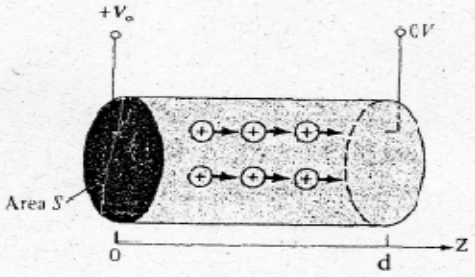
(5) Wave length

(6) Velocity of propagation. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Current-carrying compcnents in high-voltage power equipment must be cooled to carry away the heat caused by ohmic losses. A means of pumping is based on the force transmitted to the cooling fluid by charges in an electric field. The electro hydrodynamic (EHD) pumping is modelled in Figure 1. The region between the electrodes contains a uniform charge ρ_0, which is generated at the left electrode and collected at the right electrode. Calculate the pressure of the pump if $\rho_0 = 25\,mc/m^3$ and $V_0 = 22kV$. (15)

Figure 1. An electro hydrodynamic pump



Or

(b) Verify the divergence theorem for the function $\vec{A} = r^2\vec{a}_r + r\sin\theta\cos\phi\ \vec{a}_\theta$ over the surface of a quarter of a hemisphere defined by $0 < r < 3$, $0 < \theta < \pi/2$, $0 < \phi < \pi/2$. (15)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 25084

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Electrical and Electronics Engineering

EE 8351 — DIGITAL LOGIC CIRCUITS

(Common to : Electronics and Instrumentation Engineering/Instrumentation and Control Engineering)

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Draw the DTL based NAND gate.
2. Perform subtraction on the following unsigned binary numbers using the 2's-complement of the subtrahend (a) 11011 – 11001 (b) 110100 –10101
3. Mention the dependency of output in combinational circuits.
4. Draw the NAND gate circuit using NOT, AND & OR Gates.
5. Write the role of master clock generator in synchronous circuits.
6. Comment about a preset table counter & ripple counter.
7. Draw the block diagram of asynchronous sequential circuit.
8. Outline about PLA.
9. Draw the basic structure of MOS transistor.
10. List the languages that are combined together to get VHDL language.

PART B — (5 × 13 = 65 marks)

11. (a) Assume a 3-input AND gate with output F and a 3-input OR gate with G output. Show the signals of the outputs F and G as functions of the three inputs ABC. Use all 8 possible combinations of inputs ABC. (13)

Or

(b) Show that a positive logic NAND gate is a negative logic NOR gate and vice versa. (13)

12. (a) Given the following Boolean function $F = A'C + A'B + AB'C + BC$. (13)

(i) Express it in sum of minterms.

(ii) Find the minimal sum of products expression.

Or

(b) Draw the logic diagram of a 2-to-4 line decoder using NOR gates only. Include an enable input. (13)

13. (a) Explain the operation, state diagram and characteristics of a T flip-flop and master-slave JK flip-flop. (13)

Or

(b) Describe the design procedure with neat diagram about 4 bit bidirectional shift register with parallel load. (13)

14. (a) Discuss the operation of SR Latch with NOR and NAND gates analysis. (13)

Or

(b) Illustrate about hazards in sequential circuits and the steps to avoid hazards in it. (13)

15. (a) Explain the structure and working principles of TTL based Totem-pole output configuration. (13)

Or

(b) Write a VHDL code to realize a half adder using behavioral modeling and structural modeling. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Design a sequential circuit with two D flip-flops A and B, and one input x. When $x = 0$, the state of the circuit remains the same. When $x = 1$, the circuit goes through the state transitions from 00 to 01 to 11 to 10 back to 00, and repeats. (15)

Or

(b) Design a combinational circuit with three inputs, x, y and z, and the three outputs, A, B, and C. when the binary input is 0, 1, 2, or 3, the binary output is one greater than the input. When the binary input is 4, 5, 6, or 7, the binary output is one less than the input. (15)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 25150

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Electrical and Electronics Engineering

ME 8792 – POWER PLANT ENGINEERING

(Regulations 2017)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What do you understand by co–generation system?
2. What are super critical boilers?
3. List the essential components of diesel power plant.
4. Mention the methods of improving a simple gas turbine cycle efficiency?
5. What are thermal reactors?
6. Why is pressurised heavy water reactor is the preferred reactor in India?
7. List the different types of hydro plants according to the quantity of water available?
8. What is solar photovoltaic cell and module?
9. Define plant use factor? How is it related to the plant capacity factor?
10. What is a load duration curve? Mention its use.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Discuss the advantages of pulverized coal firing. (6)

(ii) List out the unique features that make circulating fluidized bed boilers more attractive than other solid fuel fired boilers. (7)

Or

(b) (i) With a schematic mention the working principles and necessity of (1) Condenser (2) Draught system. (4+4)

(ii) Draw a schematic of the layout of a thermal power plant. (5)

12. (a) (i) Enumerate the applications of diesel electric power plants. (6)

(ii) What are the functions of a fuel injection system of a diesel plant? (7)

Or

(b) (i) Write a note on combined cycle plant and its merits. (6)

(ii) Discuss the performance characteristics of a gas turbine plant. (7)

13. (a) (i) Explain the characteristic features of a Pressurised water reactor with a sketch. (10)

(ii) Write any one nuclear fission reaction. (3)

Or

(b) (i) Describe with a sketch, the main features of CANDU type reactor. (9)

(ii) Mention some standard safety measures adopted in a nuclear power plant. (4)

14. (a) (i) Explain with a neat diagram the operation of a hydro electric power plant. What are its advantages? (9)

(ii) List some turbines used in hydro electric power plant. (4)

Or

(b) Discuss about the construction and working of a solar photovoltaic and solar thermal plants. (7+6)

15. (a) (i) Enlist and explain the types of power tariffs. (7)

(ii) Compare the operating and capital cost of Thermal and Nuclear power plants. (6)

Or

(b) (i) Draw a typical load curve. Mention its salient features. (8)

(ii) List some commonly adopted pollution control strategies for a thermal power plant. (5)

PART C — (1 × 15 = 15 marks)

16. (a) The maximum load on a thermal power plant of 60 MW capacity is 50 MW at an annual load factor of 50%. The loads having maximum demands of 25 MW, 20 MW, 8 MW and, 5 MW are connected to the power station. Determine : (i) Average load on power station, (ii) Energy generated per year, (iii) Demand factor and (iv) Diversity factor. (15)

Or

(b) A hydro power plant is to be used as peak load plant at an annual load factor of 30%. The average electrical energy obtained during the year is 750×10^5 kwh. Determine the maximum demand. If the plant capacity factor is 24% find reserve of the plant. (15)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 25083

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Electrical and Electronics Engineering

EE 8301 — ELECTRICAL MACHINES — I

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define fringing.

2. What is the important property of deltamax cores?

3. What is the condition for maximum efficiency of transformer?

4. Define voltage regulation.

5. State the principle of conservation of energy.

6. Give examples for continuous energy conversion equipment and force producing devices.

7. Why load voltage across DC shunt generator is decreasing with increase in load current?

8. What are the methods to improve commutation?

9. Why series motor should not started at no-load?

10. Which method is preferred for controlling the speed of DC shunt motor above the rated speed? Justify.

PART B — (5 × 13 = 65 marks)

11. (a) A ring has a diameter of 24 cm and a cross sectional area of 1000 mm². The ring is made up of semicircular sections of cast iron and cast steel with each joint having a reluctance equal to an air-gap of 0.2 mm. Find the ampere turns required to produce a flux of 8×10^{-4} Wb. The relative Permeability of cast-steel and cast-iron are 900 and 170 respectively Neglect fringing and leakage effects. (13)

Or

(b) A square-wave voltage of amplitude E = 100 V and frequency 60 Hz is applied on a coil wound on a closed iron core. The coil has 500 turns, and the cross-sectional area of the of the core is 0.001 m², Assume that the coil has no resistance.

(i) Find the maximum value of the flux and sketch the waveforms of voltage and flux as a function of time. (6)

(ii) Find the maximum value of E if the maximum flux density is not to exceed 1.2 tesla. (7)

12. (a) A single phase transformer has $Z_1 = 1.4 + j5.2\Omega$ and $Z_2 = 0.0117 + j0.0465\,\Omega$. The input voltage is 6600 V and the turn ratio is 10.6 : 1. The secondary feeds a load which draws 300 A at 0.8 power factor lagging. Find the secondary terminal voltage and the kW output. Neglect no-load current. (10 + 3)

Or

(b) A 50 kVA, 2400 = 240 V transformer has a core loss P_c = 200 W at rated voltage and a copper loss P_{cu} = 500 W at full load. It has the following load cycle : (13)

%Load	0.0%	50%	75%	100%	110%
Power factor	–	1	0.8 lag	0.9 lag	1
Hours	6	6	6	3	3

Determine the all-day efficiency of the transformer.

13. (a) The magnetic system shown in Figure 1 has the following parameters : (13)

N = 500

i = 2 A

Width of air gap = 2.0 cm

Depth of air gap = 2.0 cm

Length of air gap = 1 mm

Neglect the reluctance of the core, the leakage flux, and the fringing flux.

(i) Determine the force of attraction between both sides of the air gap. (6)

(ii) Determine the energy stored in the air gap. (7)

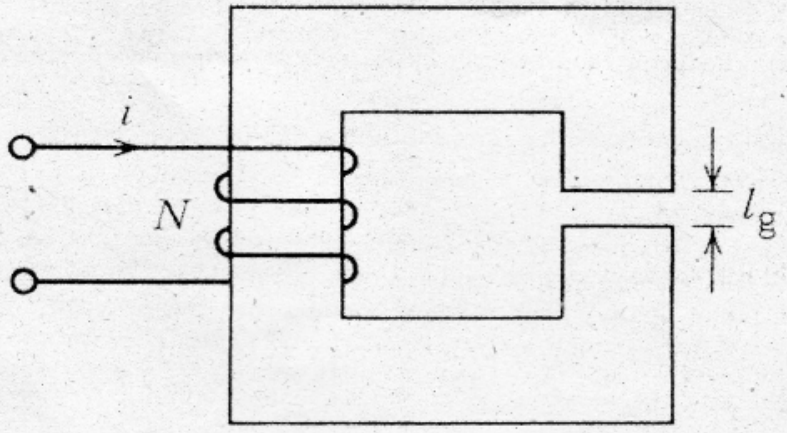


Figure. 1

Or

(b) Derive the field energy, co-energy and force for a doubly excited systems. (5 + 5 + 3)

14. (a) A 4 pole DC shunt generator, with a shunt field resistance of 100 ohms and an armature resistance of 1 ohm, has 378 wave connected conductors in its armature. The flux per pole is 0.02 Wb. If a load resistance of 10 Ω is connected across the armature terminals and the generator is driven at 1000 rpm. Calculate power absorbed by the load. (13)

Or

(b) A separately excited DC generator, when running at 1200 rpm supplies 200 A at 125 V to a circuit of constant resistance. What will be the current when the speed is dropped to 1000 rpm and the field current is reduced to 80 %. Armature resistance = 0.4 Ω and total drop at brushes = 2 V. Ignore saturation and armature reaction. (13)

15. (a) A 230 V DC shunt motor has an armature circuit resistance of 0.4 Ω and field resistance of 115 Ω. The motor drives a constant torque load and takes an armature current of 20 A at 800 rpm. If motor speed is to be raised from 800 to 1000 rpm, find the resistance that must be inserted in the shunt filed circuit. (13)

Or

(b) Explain the various characteristics of DC compound motor with necessary graphs. (13)

PART C — (1 × 15 = 15 marks)

16. (a) A transformer with normal voltage impressed has a flux density of 1.2 T and core loss comprising 1200 W eddy current loss and 3500 W hysteresis loss. What do these losses become under the following conditions :

(i) Increasing the applied voltage by 5% at rated frequency; (5)

(ii) Reducing the frequency by 5% with normal voltage impressed; and (5)

(iii) Increasing both impressed voltage and frequency by 5%. (5)

Or

(b) A series generator having a combined armature and field resistance of 0.4 Ω is running at 1000 rpm and delivering 5.5 kW at a terminal voltage of 110 V. If the speed is raised to 1500 rpm and the load adjusted to 10 kW, find the new current and terminal voltage. Assume the machine is working on the straight line portion of the magnetization characteristics. (15)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 25074

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Electrical and Electronics Engineering

EC 8353 — ELECTRON DEVICES AND CIRCUITS

(Common to : Biomedical Engineering/Computer and Communication Engineering/Electronics and Instrumentation Engineering/ Instrumentation and Control Engineering/Robotics and Automation Engineering)

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. An a.c voltage of peak value 20 V is connected in series with a silicon diode and load resistance of 500 Ω. If the forward resistance of diode is 10 Ω find the peak current through the diode.

2. State two disadvantages of half wave rectifier.

3. State any two differences between JFET and BJT.

4. When V_{GS} of a JFET changes from –3.1 V to –3 V, the drain current changed from 1 mA to 1.3 mA. Find the value of transconductance.

5. For a certain D–MOSFET, I_{DSS} = 10 mA and $V_{GS(off)}$ = –8 V. Check if it is an – *n* channel or *p* channel device? Justify your answer.

6. State the phase relationships between input /output currents and phase relationships between input / output voltages of various transistor configurations.

7. A multistage amplifier employs five stages each of which has a power gain of 30. What is the total gain of the amplifier in db?

8. Define differential mode signals of a differential amplifier.

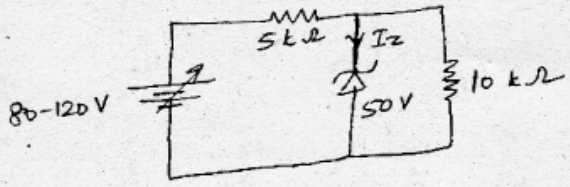
9. The overall gain of a multistage amplifier is 140. When negative voltage feedback is applied the gain is reduced to 17.5. Find the fraction of the output that is feedback to the input.

10. In a phase shift oscillator, $R_1 = R_2 = R_3 = 1\ M\Omega$ and $C_1 = C_2 = C_3 = 68\ pF$. At what frequency does the circuit oscillate?

PART B — (5 × 13 = 65 marks)

11. (a) (i) Explain the working of Zener diode as voltage regulator. (7)

(ii) For the following circuit, find the maximum and minimum values of Zener diode current. (6)



Or

(b) (i) Explain the working of a bridge rectifier. (6)

(ii) In a bridge rectifier circuit, input supply is 230 V, 50 Hz. Primary to secondary turns ratio is 4 : 1, load resistance is 200 Ω. The diodes are ideal. Find dc output voltage, PIV and output signal frequency. (7)

12. (a) A germanium transistor is to be operated at zero signal $I_C = 1$ mA. If the collector supply voltage $V_{CC} = 12$ V, what is the value of R_B in the base resistor method? Assume $\beta = 100$. If another transistor of same batch with $\beta = 50$ is used, what will be new value of zero signal I_C for same R_B? Comment on the results.

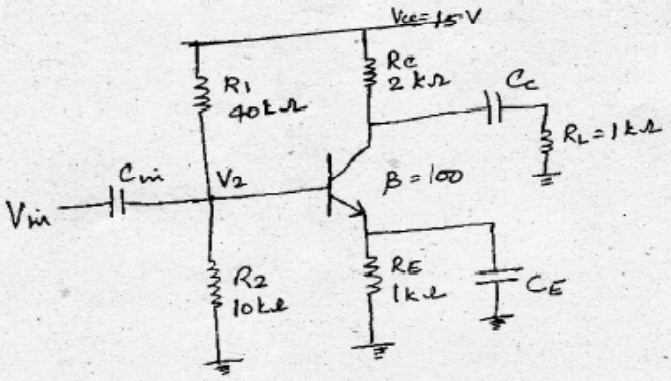
Or

(b) (i) Discuss the characteristics of UJT. (7)

(ii) The intrinsic stand-off ratio for a UJT is 0.6. If the inter base resistance is 10 kΩ, what are the value of R_{B1} and R_{B2}? (4)

(iii) State two applications of UJT. (2)

13. (a) For the circuit shown below, find (i) dc bias levels (ii) dc voltages across the capacitors (iii) ac emitter resistance (iv) voltage gain and (v) state of the transistor.



Or

(b) Explain the working of a *n*-channel depletion MOSFET. Discuss its transfer characteristics.

14. (a) (i) A parallel resonant circuit has a capacitor of 250 pF in one branch and inductance of 1.2 mH and a resistance of 10 Ω in the parallel branch. Find (1) resonant frequency (2) impedance of the circuit at resonance (3) Q-factor of the circuit. (6)

(ii) Draw the frequency response of an ideal and a practical tuned amplifier and discuss their characteristics. (7)

Or

(b) (i) Compare voltage and power, amplifiers. (6)

(ii) Explain the working of a single ended input differential amplifier. (7)

15. (a) (i) A 1 mH inductor is available. Find the capacitor values of a Colpitts oscillator so that f = 1 MHz and feedback fraction = 0.25. (5)

(ii) Explain the working of phase shift oscillator. (8)

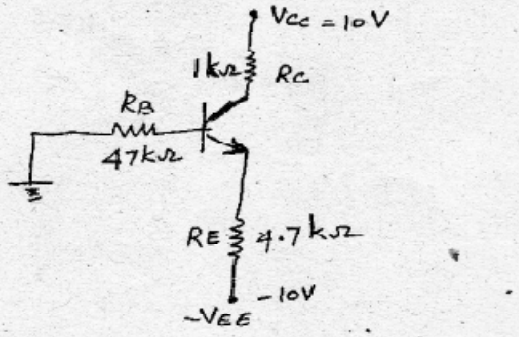
Or

(b) (i) An amplifier in required with a voltage gain of 100 which does not vary by more that 1%. If it is to use negative feedback with a basic amplifier the voltage gain of which can vary by 20%, find the minimum voltage gain required and the feedback factor. (6)

(ii) Discuss the advantages of negative feedback in amplifiers. (7)

PART C — (1 × 15 = 15 marks)

16. (a) Find the Q point of the transistor shown below. Also draw the d.c load line. Give $\beta = 100$ and $V_{BE} = 0.7$ V.



Or

(b) (i) Explain the self-biasing of a JFET. (6)

(ii) In a self-bias n-channel JFET, the operating point is to be set at $I_D = 1.5$ mA and $V_{DS} = 10$ V. The parameters are $I_{DSS} = 5$ mA and $V_{GS(off)} = -2$ V. Find the values of Rs and R_D if $V_{DD} = 20$ V. (9)

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Question Paper Code : 80221

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Fourth Semester

Aeronautical Engineering

MA 8491 – NUMERICAL METHODS

(Common to Electrical and Electronics Engineering/Chemical Engineering/ Chemical and Electrochemical Engineering/Plastic Technology/Polymer Technology/Textile Technology/Civil Engineering/B.E. Electronics and Instrumentation Engineering/Instrumentation and Control Engineering)

(Regulation 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Find the Newton Raphson formula to find $\sqrt[3]{N}$, where N is a positive integer.
2. Compare Gauss elimination method and Gauss-Jordan method for solving a linear system.
3. Using Lagrange's interpolation, construct a quadratic interpolating polynomial $y(x)$ for unequal interval given that the points are (x_0, y_0), (x_1, y_1) and (x_2, y_2).
4. Find $\nabla^2(\sin x)$, where h is length of the interval.
5. Write the Newton Raphson backward formula for the first and second order derivatives at the value $x = x_n$.
6. Evaluate $\int_{-1}^{1} \frac{x^4}{1+x^2}\,dx$ using Trapezoidal rule with $h = 0.25$.
7. By Euler's method find $y(1.1)$, given $\frac{dy}{dx} = 2(x + y), y(1) = 0$.
8. State Adams-Bash forth predictor corrector formulae.
9. Obtain the finite difference scheme for the differential equation $\frac{d^2y}{dx^2} - y = 2$.
10. Write the diagonal five point formula to solve the Laplace equation $u_{xx} + u_{yy} = 0$.

PART B — ($5 \times 16 = 80$ marks)

11. (a) (i) Find the real root of $\cos x - 2x + 3 = 0$ method correct to 3 decimal places using iteration method. (6)

(ii) Find the eigen values and eigen vectors of $\begin{pmatrix} 1 & 0 & 0 \\ 0 & 3 & -1 \\ 0 & -1 & 3 \end{pmatrix}$, using Jacobi method. (10)

Or

(b) (i) Solve the system of equations by Gauss-Jordan method $3x - y + 2z = 12$, $x + 2y + 3z = 11$ and $2x - 2y - z = 2$. (8)

(ii) Using Power method find the largest eigen value and the corresponding eigen vector of the matrix $\begin{pmatrix} 1 & 3 & -1 \\ 3 & 2 & 4 \\ -1 & 4 & 10 \end{pmatrix}$ with initial vector $\begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix}^1$. (8)

12. (a) (i) Using Newton's divided difference formula, find the polynomial $y(x)$ and hence find $y(3)$ from the following data. (8)

x	–2	0	1	4
y	0	–2	0	90

(ii) Using Newton's forward interpolation formula, find the polynomial $f(x)$ from the following data and hence find $f(3)$. (8)

x	0	2	4	6
$f(x)$	–14	6	18	118

Or

(b) (i) The following values of x and y are given (8)

x :	1	2	3	4
y :	1	2	5	11

Find the cubic splines.

(ii) Using Newton's backward interpolation formula, find the Polynomial $y(x)$ from the following data and hence find $y(5)$. (8)

x :	–2	0	2	4
$y(x)$:	–21	9	7	165

13. (a) (i) The table give below reveals the velocity v of a body during the time 't' specified. Find its acceleration at $t = 1.1$ (8)

t	1.0	1.1	1.2	1.3	1.4
v	43.1	47.7	32.1	56.4	60.8

(ii) Evaluate $\int_2^3 \frac{x}{1+x^3}\,dx$ by Gaussian two point and three point quadrature formula. (8)

Or

(b) (i) Find the gradient of the road at the initial point of the elevation above a datum line of seven points of road which are given below: (8)

x:	0	300	600	900	1200	1500	1800
$f(x)$:	135	149	157	183	201	205	193

(ii) Evaluate $\int_2^3 \int_1^2 \frac{dxdy}{4xy}$ using Simson's rule by four sub intervals. (8)

14. (a) (i) Apply Taylor's series method, find $y(0.1)$ and $y(0.2)$ correct to three decimal places if $\frac{dy}{dx} = 1 - 2xy$ and $y(0) = 0$. (8)

(ii) Apply Runge-Kutta method of order 4 to find an approximate value of y for $x = 0.2$ in steps of 0.1, if $\frac{dy}{dx} = x + y^2$ given that $y = 1$ when $x = 0$. (8)

Or

(b) (i) Using Modified Euler method, find $y(0.1)$ and $y(0.2)$ given $\frac{dy}{dx} = x^2 + y^2; y(0) = 1$. (8)

(ii) Solve numerically $\frac{dy}{dx} = 2e^x - y$ at $x = 0.4$ by Milne's predictor and corrector method, given their values at the four points $x = 0, 0.1, 0.2$ and 0.3 as $y_0 = 2y_1 = 2.010$, $y_2 = 2.040$ and $y_3 = 2.090$. (8)

15. (a) Solve the equation $u_{xx} + u_{yy} = 0$ over a square region of side 4. Boundary condition are $u(0, y) = 0, u(4, y) = 8 + 2y$, $u(x,0) = \frac{x^2}{2}, u(x, 4) = x^2$, $0 \le x \le 4$ and $0 \le y \le 4$. (16)

Or

(b) (i) Solve $u_{xx} = u_{tt}, 0 < x < 1, t > 0$ given $u(0,t) = 0$, $u(1,t) = 100 \sin \pi t$, $u(x,0) = 0$ and $u_t(x,0) = 0$. Compute u for 4 time steps with $h = 0.25$. (8)

(ii) Solve $16\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2}$ subject to the conditions $u(x, 0) = 0, u(0, t) = 0$ and $u(1, t) = 100t$. Compute u for one step in t direction, taking $h = \frac{1}{4}$ using Crank-Nicolson formula. (8)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80198

B.E/B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Fourth Semester

Instrumentation and Control Engineering

IC 8451 — CONTROL SYSTEMS

(Common to Electrical and Electronics Engineering/Electronics and Instrumentation Engineering)

(Regulation 2017)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Tabulate the parameters of the translational and rotational mechanical systems.

2. For the mechanical system shown in figure.1, draw the corresponding Force-Voltage analogy circuit.

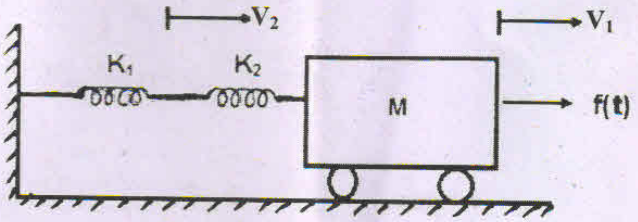


Figure – 1

3. Mention the effects of Proportional Integral (PI) controller.

4. For servomechanisms with open loop transfer function given by $G(S) = \frac{1}{s^2+2s+3}$ Determine the position error and steady state error for a unit step input.

5. The damping ratio and natural frequency of oscillations of a second order system is 0.3 and 3 rad/sec respectively. Calculate resonant frequency and resonant peak.

6. If the bode plot crosses 180° line, either at very low frequencies or very high frequencies in the selected frequency range, what is the inference regarding the relationship between open loop gain and stability?

7. What is compensation? Why are compensators required in feedback control systems?

8. For what range of K the following system shown in figure. 2 is asymptotically stable?

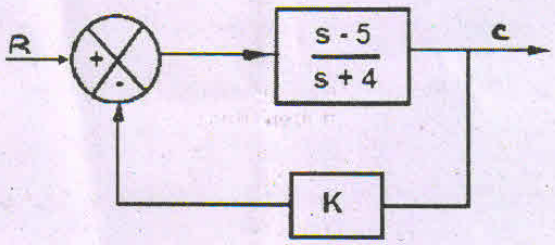


Figure – 2

9. Enumerate the advantages of state space analysis.

10. State the mechanism in control engineering which implies an ability to measure the state by taking measurements at output?

PART B — (5 × 13 = 65 marks)

11. (a) Draw a signal flow graph and obtain the closed loop transfer function of a system whose block diagram is given in Figure. 3

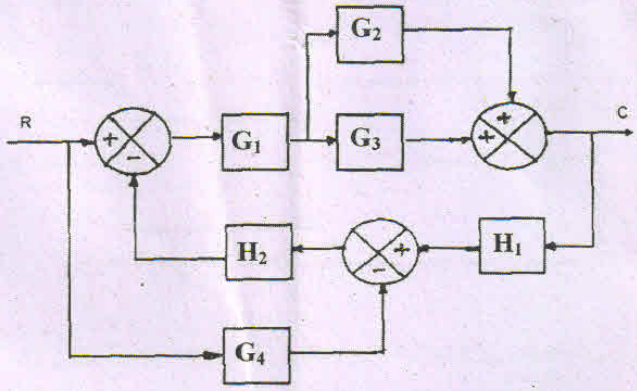


Figure – 3

Or

(b) Define transfer function and derive the transfer function at field controlled DC servomotor.

12. (a) A unity feedback system is characterized by the open oop transfer function.

$$G(s) = \frac{1}{s(0.5\,s+1)(0.2\,s+1)}$$

(i) Write the closed loop transfer function $\frac{C(s)}{R(s)}$

(ii) Find damping factor, natural frequency of the system

(iii) Determine rise time, peak time and peak overshoot of the system

(iv) Calculate steady state Error due to unit-step input.

Or

(b) Derive the expression for rise time and peak time of a second order under damped system due to unit step input.

13. (a) Sketch the Bode plot for the transfer function of a system represented by $G(S) = \frac{100}{s(s+1)(s+2)}$ and determine (i) Gain Margin (ii) Phase Margin and closed loop stability.

Or

(b) Sketch the Polar plot for the following open loop transfer function and determine the gain margin and phase margin $G(s) = \frac{1}{(1+s)(1+2s)}$.

14. (a) (i) Assume any four different pole locations for a system sketch the response and comment on stability of each case. (7)

(ii) For the given characteristic equation examine the stability of the system using Routh's criterion $s^5+4s^4+8s^3+8s^2+7s+4=0$. (6)

Or

(b) From the first principles explain how do you obtain the stability of a linear system using Nyquist criterion?

15. (a) Consider the following RLC series circuit shown in figure. 4 and obtain its state model.

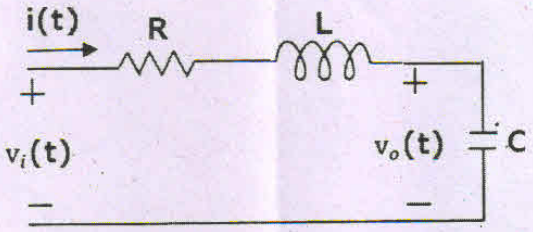


Figure – 4

Or

(b) Consider the following plant of the state-space representation:

$$A = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} \quad B = \begin{bmatrix} -2 \\ 2 \end{bmatrix} \quad C = [-2 \quad 0]$$

Examine the Controllability and Observability of a state-space formed by the system.

PART C — (1 × 15 = 15 marks)

16. (a) Design a lag compensator for the system given by $G(s) = \frac{K}{s(s+2)}$ to meet the following design specifications

(i) Static velocity error constant Kv =10 sec^{-1} and

(ii) Phase margin $\Phi m \geq 60^{\circ}$.

Or

(b) A unity feedback control system has an open loop transfer function $G(s) = \frac{K}{s(s+1)(s+2)}$. Make a rough sketch of the root locus plot of the system, explicitly identifying the centroid, the asymptotes, the departure angles from the complex poles of G(s) and the jw–axis crossover point. By trial-and-error application of the angle criterion, locate a point on the locus that gives dominant closed loop poles with ς = 0.5 Evaluate the value of K at this point.

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80134

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Fourth Semester

Electrical and Electronics Engineering

EE 8451 — LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

(Common to Electronics and Instrumentation Engineering/Instrumentation and Control Engineering)

(Regulation 2017)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term Encapsulation.

2. List the advantages of thin film resistors.

3. Give the various types of frequency compensation.

4. The output voltage of a certain op-amp circuit changes by 20 V in 4 μs. What is its slew rate?

5. List the four requirements of an Instrumentation amplifier.

6. Give the circuit using Op-amp for a first order low-pass filter with variable gain.

7. Determine the frequency of oscillations, if the duty cycle D = 20% and the ON period $T_{on} = 2$ ms.

8. Draw the output of a missing pulse detector.

9. What is a Load cell?

10. Give the seven output voltage options available in fixed voltage series regulator.

PART B — (5 × 13 = 65 marks)

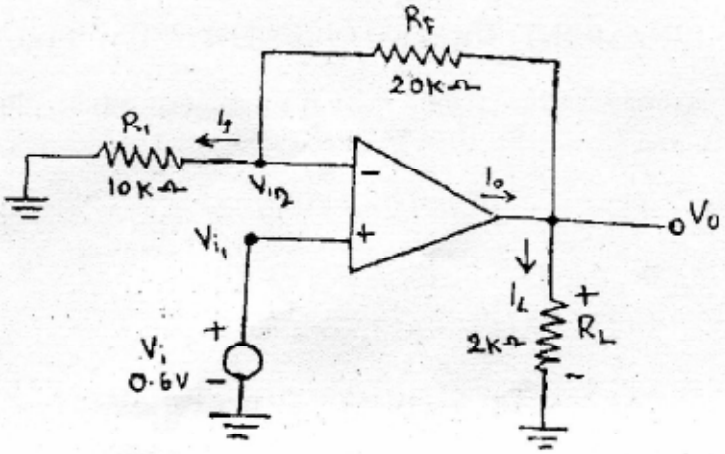
11. (a) (i) Explain the fabrication technique of FET in detail. (7)

(ii) Discuss the Photolithographic process with necessary illustrations. (6)

Or

(b) Describe the methods in Thin and Thick film technology.

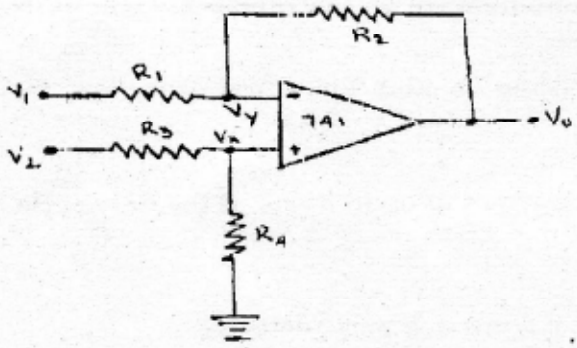
12. (a) For the given non-inverting amplifier shown in figure below, determine (i) A_v; (ii) V_0; (iii) I_L and (iv) I_0.



Or

(b) Explain with neat circuit expressions about the working of (i) Inverting Amplifiers (ii) Integrating circuit and derive the gain. (6 + 7)

13. (a) Find the following for the given Op-amp differential amplifier : (i) The gain of the amplifier (ii) The input resistance (iii) Output voltage, when the inputs are $1\sin(2000t)$ V and $1.2\sin(2000t)$ and the $R_1 = R_3 = 1.2$ kΩ and $R_2 = R_4 = 22$ kΩ.



Or

(b) Discuss the application of Op-amps, with necessary equivalent circuits and expressions for (i) D/A converter (ii) A/D converter.

14. (a) In detail, explain the functional block and characteristics of 555 Timer with its PWM application.

Or

(b) Discuss the ICC 566 as a voltage controlled oscillator with necessary illustrations.

15. (a) Explain the Fixed voltage regulator and its applications.

Or

(b) Explain the function of SMPS with neat waveforms and schema.

PART C — (1 × 15 = 15 marks)

16. (a) With neat figures explain the design of a circuit for performing (i) square wave generation (ii) sweep signal conversion (iii) clamped signal output. (15)

Or

(b) Determine the output frequency f_0, lock range Δf_L and capture range Δf_C of IC 565. Assume $R_1 = 15\,k\Omega$, $C_1 = 0.01\,\mu F$, $C = 1\,\mu F$ and the supply voltage is +12 V. (15)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80133

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Fourth Semester

Electrical and Electronics Engineering

EE 8403 — MEASUREMENTS AND INSTRUMENTATION

(Regulation 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate Accuracy and Precision.

2. Distinguish between Gravity control and Spring control.

3. Specify the use of copper shading bands. Where is it placed in the energymeter?

4. How the flux density is measured?

5. How Maxwell's bridge differ from Anderson bridge, although both are used for measuring inductance?

6. Specify the purpose of Wagner earthing device.

7. Mention the use of Lissajous patterns.

8. Specify the application of data loggers.

9. Mention the electrical phenomena used in transducers.

10. List the elements of DAQ system.

PART B — (5 × 13 = 65 marks)

11. (a) Explicate the static and dynamic characteristics of an instrumentation system.

Or

(b) Elaborate the working of Moving iron instrument and derive the torque equation of the Moving iron instrument.

12. (a) State Blondel's theorem and explain how the power measurement using two wattmeter method.

Or

(b) Describe the step by process involved in determination of B-H curve and hysteresis loop.

13. (a) Derive the expressions for measurement of unknown capacitance with a neat bridge circuit.

Or

(b) Derive the expressions for measurement of unknown inductance using Hays bridge.

14. (a) Explain in detail about the various types of Recorders.

Or

(b) Explain in detail about the LED and LCD displays.

15. (a) Elaborate the types of resistive and inductive transducers used for measuring pressure.

Or

(b) Elucidate the elements of data acquisition system.

PART C — (1 × 15 = 15 marks)

16. (a) A sinusoidal alternating voltage of amplitude, 100-V is applied across a circuit containing a rectifying device which entirely prevents current from flowing in one direction and offers a non-inductive resistance of 10 ohm to the flow of current in the other direction. Find the reading on (i) a hot wire, (ii) a moving coil ammeter in the circuit.

Or

(b) A Maxwell's capacitance bridge shown in. Fig. 1 is used to measure an unknown inductance in comparison with capacitance. The various values at balance : $R_2 = 400$ ohm; $R_3 = 600$ ohm; $R_4 = 1000$ ohm; $C_4 = 0.5$ μF.

Calculate the values of R_1 and L_1. Calculate also the value of storage Q factor of the coil if frequency is 1000 Hz.

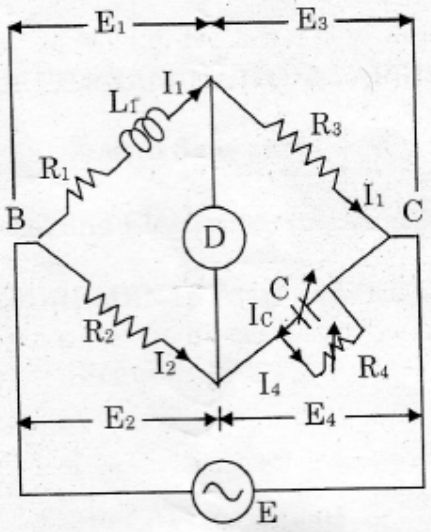


Fig. 1

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Question Paper Code : 80132

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Fourth Semester

Electrical and Electronics Engineering

EE 8402 — TRANSMISSION AND DISTRIBUTION

(Regulation 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the advantages of using bundled conductors?

2. List out the parameters affecting skin effect in transmission line.

3. What is the effect of leading load power factor on voltage regulation of a short transmission line?

4. What are the disadvantages of corona?

5. What are the types of line supports used in transmission and distribution systems?

6. What are the factors affecting the sag in a transmission line?

7. What are the desirable characteristics of insulating materials used in cables?

8. What are the sources of heat generation in an underground cable?

9. What are the limitations of Kelvin's law?

10. What are advantages of FACTS controllers?

PART B — (5 × 13 = 65 marks)

11. (a) Determine the inductance per km of a transposed double circuit 3-phase line shown in Figure 11(a) below. Each circuit of the line remains on its own side. The diameter of the conductor is 2.532 cm.

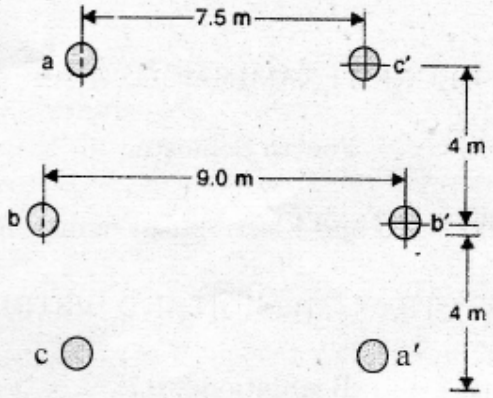

Figure 11(a)

Or

(b) A 3-phase, 50 Hz, 66 kV overhead line conductors are placed in a horizontal plane as shown in Figure 11(b) below. The conductor diameter is 1.25 cm. If the line length is 100 km, calculate :

(i) capacitance per phase,

(ii) charging current per phase, assuming complete transposition of the line.

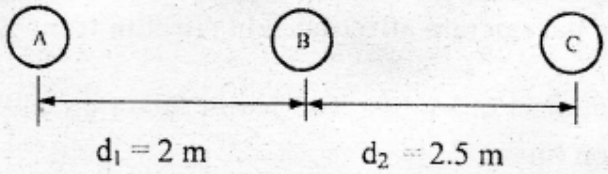

Figure 11(b)

12. (a) A 3-phase, 50 Hz transmission line 100 km long delivers 20 MW at 0.9 pf lagging and at 110 kV. The resistance and reactance of the line per phase per km are 0.2Ω and 0.4Ω respectively. The capacitive admittance is 2.5×10^{-6} siemen/km/phase. Calculate :

(i) the voltage at the sending end and

(ii) efficiency of transmission. Use nominal T method.

Or

(b) (i) A 275 kV transmission line has the following line constants:

$A = 0.85 \angle 5^\circ$ and $B = 200 \angle 75^\circ$

Determine the power at unity power factor that can be received if the voltage profile at each end is to be maintained at 275 kV. (7)

(ii) Discuss the factors affecting corona. (6)

13. (a) The towers of height 30 m and 90 m respectively support a transmission line conductor at water crossing. The horizontal distance between the towers is 500 m. If the tension in the conductor is 1600 kg, find the minimum clearance of the conductor and water and clearance mid-way between the supports. Weight of conductor is 1.5 kg/m. Bases of the towers can he considered to be at water level.

Or

(b) Each line of a 3-phase system is suspended by a string of 3 similar insulators. If the voltage across the line unit is 17.5 kV, calculate the line to neutral voltage. Assume that the shunt capacitance between each insulator and earth is $1/8^{th}$ of the capacitance of the insulator itself Also find the string efficiency.

14. (a) A conductor of 1 cm diameter passes centrally through a porcelain cylinder of internal diameter 2 cm and external diameter 7 cm. The cylinder is surrounded by a tightly fitting metal sheath. The permittivity of porcelain is 5 and the peak voltage gradient in air must not exceed 34 kV/cm. Determine the maximum safe working voltage.

Or

(b) (i) A single-core cable has a conductor diameter of 1cm and insulation thickness of 0.4 cm. If the specific resistance of insulation is 5×10^{14} Ω-cm, calculate the insulation resistance for a 2 km length of the cable. (5)

(ii) What is meant by grading of cables? Explain any one method of grading. (8)

15. (a) What is a transformer sub-station? Discuss the role of major components in a transformer sub-station.

Or

(b) (i) What is neutral grounding? What are the advantages of neutral grounding? (6)

(ii) Explain the resistance grounding of the neutral point of a 3-phase system. (7)

PART C — (1 × 15 = 15 marks)

16. (a) A 2-wire d.c. ring distributor is 300 m long and is fed at 240 V at point A. At point B, 150 m from A, a load of 120 A is taken and at C, 100 m in the opposite direction, a load of 80 A is taken. If the resistance per 100 m of single conductor is 0.03 Ω. find :

(i) current in each section of distributor

(ii) voltage at points B and C. (8+7)

Or

(b) A single phase distributor AB, one km long has resistance and reactance per conductor of 0.1 Ω and 0.15 Ω respectively. At the far end, the voltage $V_B = 200$ V and the current is 100 A at a p.f. of 0.8 lagging. At the mid-point M of the distributor, a current of 100 A is tapped at a p.f. of 0.6 lagging with reference to the voltage V_M at the mid-point.

Calculate :

(i) voltage at mid-point, V_M (7)

(ii) sending end voltage, V_A. (8)

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80131

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Fourth Semester

Electrical and Electronics Engineering

EE 8401 — ELECTRICAL MACHINES — II

(Regulation 2017)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Distinguish between the 'Synchronous reactance' and the 'Potier reactance' of a synchronous generator.
2. Why the concept of Two reaction theory is applied only to salient pole machines.
3. Name the various torques associated with a synchronous motor.
4. What for damper windings are provided in a synchronous machines?
5. A 3-phase induction motor is wound for 4 poles and is supplied from 50 Hz system. Calculate the speed at which the magnetic field of the stator is rotating.
6. State the merits and demerits of double cage induction machines.
7. List the advantages of rotor resistance starter based induction motor starting.
8. What type of braking is employed during deceleration of an induction motor?
9. What is the role of 'magnetic bridges' in the operation of a shaded pole induction motor?
10. What is the necessity of having laminated yoke in an ac series motor?

PART B — (5 × 13 = 65 marks)

11. (a) A 3-phase, 50 Hz, star-connected alternator with 2-layer winding is running at 600 rpm. It has 12 turns/coil, 4 slots/pole/phase and a coil-pitch of 10 slots. If the flux/pole is 0.035 Wb sinusoidally distributed, find the phase and line emf's induced. Assume that the total turns/phase are series connected. (13)

Or

(b) A 3-phase, star-connected, 1000 kVA, 11 kV alternator has rated current of 52.5 A. The ac resistance of the winding per phase is 0.45 Ω. The test results are given below :

OC test: field current = 12.5 A, voltage between lines = 422 V

SC test; field current = 12.5 A, line current = 52.5 A

Determine the full-load voltage regulation of the alternator at (i). 0.8 p.f. lagging, and (ii). 0.8 p.f. leading. (13)

12. (a) (i) List the various methods used for starting of synchronous motors. Explain any two methods. (8)

(ii) Explain with the help of phasor diagram, the operation of a synchronous condenser. (5)

Or

(b) (i) Explain V curves as applied to synchronous motors. (7)

(ii) With the help of phasor diagram, obtain the expression for mechanical power developed by a synchronous motor. (6)

13. (a) (i) Derive an expression for the torque of a 3-phase induction motor under running condition and obtain the condition for maximum running torque. (8)

(ii) Write short notes on 'Synchronous Induction Motor'. (5)

Or

(b) With neat diagram, explain the constructional details and working principle of a 3-phase induction motor. (13)

14. (a) Describe the working of (i) Auto-Transformer starter and (ii) Star-Delta starter for a 3-phase induction motor with neat diagrams. (13)

Or

(b) Briefly discuss various methods to control the speed of a 3-phase induction motor. (13)

15. (a) Explain the experimental method to determine the equivalent circuit parameters of a single phase induction motor. (13)

Or

(b) Explain the construction and working principle of variable reluctance stepper motor. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Explain the experimental tests to be conducted on an induction motor to draw the circle diagram. How the motor characteristics is determined from the circle diagram? (15)

Or

(b) Explain the operation of a single phase induction motor on the basis of double field revolving theory. (15)

A BRIEF HISTORY OF THE COLLEGE

K.L.N. College of Engineering is the first self-financing Co-educational Engineering College in Madurai, started in 1994 by Munificence of Philanthropist and well wishers in Sourashtra Community which is a linguistic minority in Tamilnadu. This college is sponsored by the committee of eminent industrialists and academicians led by enthusiastic, educationalist and industrialist (Late) Thiru K.L.N. Krishnan. This college has the approval of All India Council for Technical Education, New Delhi and is affiliated to Anna University, Chennai.

Thiru. K.L.N. Krishnan, Founder President of this Engineering College has rendered Yeoman service to Sourashtra Arts & Science College and Sourashtra Girls Higher Secondary School, Madurai for the past several years. He also promited a Polytechnic under the name of K.L. Nagaswamy Memorial Polytechnic College in Viraganur, Madurai in 1983. This Engineering College, functioned in the premises of the above polytechnic during the academic years 1994-95 & 1995-96 was shifted to its own premises in the year 1996.

(Late) Thiru K.L.N. Krishnan is the Founder President, and the college is now under the management of Dr. K.N.K. Ganesh as Secretary & Correspondent and other executive committee members.

Campus :

This college is situated on the South Eastern outskirts of Madurai, 11th Km on Madurai – Nedungulam Road. It is built in an area of 53.8 acres. The Campus has multistoreyed buildings consisting of well provided class rooms, drawing halls, seminar halls, conference hall, library, Air-Conditioned Computer centres, staff rooms and student rest rooms. The infrastructure also consists of five double storeyed laboratory buildings and three single storeyed workshops and Machine shop, and an automobile workshop.

The Administrative block (2 storeyed) of 1,185 sq. metre with office in the ground floor, I.T. laboratory in the first floor & class rooms in the second floor has been constructed on the eastern side.

A two storeyed block of 1,185 sq. metre consisting class room has been constructed on the southern side of the administrative block.

A two storeyed block of 1,185 sq. metre with EIE laboratory in the ground floor, DSP laboratory in the first floor & class rooms in the second floor has been constructed on the western side of the administrative block.

A two storeyed block of 2,122 sq. metre with spacious library, video library & Electronic resource section in the ground floor, class rooms in the first floor & CSE laboratory in the second floor has been constructed near the administrative block.

A single storeyed block of 1,193 sq. metre with S.M. laboratory in the ground floor CAD, CAM laboratories in the first floor & class rooms in the second floor has been constructed on the north western side of the administrative block.

Three Mechanical sheds (occupied by three Mech. Engg. Laboratory) of 2460 sq. metre have been constructed on the northern side of the mechanicalblock. An automobile work shop of 2304 sq. metre has been constructed on the north western side of the administrative block.

An Indoor stadium cum Auditorium of 2,221 sq. metre has been constructed on the northern side of the administrative block.

A separate double storeyed post-Graduate block of 4,020 square metre for M.B.A. and M.C.A. departments has been constructed on the South Western side of the administrative Block.

A single storeyed block of two canteens with 2,485 square metre in the ground floor and ladies rest room in the first floor has been contructed on the south western side of the Administrative Block.

A single storeyed block of 1,289 square metre for Electrical & Electronics Engg., Laboratories & class rooms in the ground floor and Electronics & Communication Laboratory and Class rooms in the first floor has been constructed on the western side of the Administrative Block.

A two-storeyed block with an area of 2,956 sq. metre has been constructed as an extension to Block III Opposite the U.G. library Block. This block comprised Physics lab, Chemistry lab and EIE Lab. D.S.P. Lab & Class rooms.

A two-storeyed block with an area of 2076 squre metre for the use of EEE Dept. in the ground floor & ECE Dept. in the first & 2nd floors is now under construction as an extension to the existing EEE & ECE block on the western side of the administrative block.

A two storeyed block with an area of 2,977 sq. metre for the use of Mechanical & Automobile depts. is now under construction, as an extension to the existing Mechanical block on the North-Western side of the administrative block.

A separate building with ground floor of area of 170 sq. metre for the installation of Generator on the South-eastern side (Opposite to the Vinayagar temple) of the administrative block is under construction & (nearing completion)

In order to facilitate the easy accessibility for the students, in all, 950 numbers of computers have been installed so far. This sounds the management's conviction in providing essential infrastructure for the learning purpose in our college.

An overhead Tank of 20,000 Litre Capacity at a height of 40 feet has been constructed at a cost of Rs.4 lakhs, donated by Rotary international, Rotary District-1240, Rotary club of LEIGH-ON-SEA. Treated drinking water plant at a cost of Rs.2 lakhs has been installed near the overhead tank.

Well-furnished Men's Hostel, Mess block and canteen block are also inside the campus. The college is a quiet retreat, ideal for concentrated study, away from distractions and disturbances of a large city.

A single storeyed block of 1,330 square metre with a spacious dining hall in the ground floor and 13 rooms in the first floor for men students has been constructed on the northern side of the administrative block and is already in use. A two storeyed hostel block of 2,034 square metre adjacent to the existing hostel for men students has been constructed.

Total expenditure incurred so far towards the cost of equipments & buildings & other assets is about Rs.22.50 crores.

A VINAYAGAR Temple on the eastern side of the administrative Block has been constructed. Eight class rooms for I year B.E. / B.Tech 2 class room for M.E. (P.S.) students, and two staff rooms have been constructed in the ECE/EEE block.

A Ladies Hostel of 1460 sq.m. which can accommodate about 150 students is within the campus.

HISTORY OF THE DEPARTMENT

B.E. - Electrical and Electronics Engineering		M.E. - Power Systems Engineering		Ph.D.	
Year of start & History of Intake	1994, with an intake of 40	Year of start & History of Intake	2004, with an intake of 18	Year of Recognition as Research Centre	December 2012
	1996, with an intake of 60		2012, with an intake of 24	First Renewal	December 2015, December 2018
	2002, with an intake of 90				
	2011, with an intake of 120			Second Renewal	December2018, upto December 2021
Both UG & PG programs are permanently affiliated to Anna University, Chennai.					

Accreditation status				
First Accreditation	Second Accreditation	Third Accreditation	Fourth Accreditation	Fifth Accreditation
3 YEARS W.E.F. 19-3-2004	3 YEARS W.E.F. 19-7-2008	2 YEARS W.E.F. 05-08-2013	Academic Year 2016-17,2017-18 and 2018-19, i.e., upto 30-06-2019	Academic year 2019 -2020 , 2020-2021, 2021-2022 i.e., upto 30.06.2022

FACULTY PROFILE as on July 2019

Ph.D's	Doing Ph.D	M.E.
9	3	9
Professors	**Associate Professor**	**Assistant Professor**
5	4	12

SALIENT FEATURES OF THE DEPARTMENT

1.GENERAL

- Started offering B.E. in Electrical and Electronics Engineering in the year 1994 with an intake of 40 (No.-732-50-8/RC/94, dated 11th August 1994, AICTE), an intake of 60 in 1996, an intake of 90 in 2002 (F.No:730-52-227(E)/ET/97 dated 19.06.2002), with the latest intake of 120 in 2011 (F.No.Southern/1-400215781/2011/EOA, dated 01.09.2011, AICTE).
- Started offering M.E. in Power Systems Engineering in the year 2005 with an intake of 20 and increased intake to 24 in 2012 (F.No.Southern/1-687512981/2012/EOA, dated 10.05.2012, AICTE).
- Accredited in March 2004 (First time - F.No.NBA/ACCR-242/2003, dated 24/03/04) and Re-accredited (Second time - F.No.NBA/ACCR-242/2003, dated July 19, 2008), Re-accredited (Third time - For 2 years w.e.f. 28-08-2012), Re-accredited (Fourth time - For 3 years w.e.f. July 2016, upto 30.06.2019, F.No. 33-01/2010-NBA, dated 04.02.2017), Re-accredited (Fifth time - For 3 years w.e.f. July 2018, upto 30.06.2022, F.No. 33-01/2010-NBA, dated 22.03.2019) by National Board Accreditation, New Delhi.
- Recognized Research Centre No.4490408, Approved by Anna University, Chennai with effect from December 2012, offering guidance for M.S & Ph.D.(Full time/Part time) (Renewed upto December 2018, Lr.No. 4904/IR/EEE/AR1 dated 18.02.2016) , (Renewed upto December 2021, Lr.No. 4904/IR/EEE/AR2 dated 29.01.2019).
- Both UG and PG programs are permanently affiliated to Anna University, Chennai with effect from December 2012.
- MODROB fund of Rs.5 lakhs was allotted for the year 2011-2012 for the Power Electronics laboratory (No.8024/RIFD/MOD-131(pvt)/Policy-III/2011-2012, dated 06.03.2012).
- Department of Science and Technology (DST), sanctioned financial assistance of Rs.19,75,800-/- for the project entitled **'Smart Meter for measuring Power Quality Disturbances using GSM Technology'**, Dr.K.Gnanambal, Professor/EEE is the Principal Investigator (Ref. No. IDP/IND/4/2015 dated 03.08.2016).
- Department of Science & Technology (DST) sanctioned financial assistance of Rs. 36.5 lakhs for the project entitled " **Design & Development of Sensor based Sewage Block Remover & Management System**" - **Dr. S. Parthasarathy, Prof/EEE** is the Principal Investigator. (D.O. No. DST/TDT/ EAG/DDP- 03/2018 dated 11.06.2018.
- TUV SUD South Asia Private Limited, Chennai sanctioned a financial assistance of Rs.31.7 lakhs for the project **entitled " Investment Grade Energy Audit in street lighting system and preparing detailed project report for implementing Energy Saving mechanism in street lighting system in the 19 Designated Municipalities in Madurai Region" -**Dr. S. Venkatanarayanan, Prof/ EEE is the Principal Investigator. (PO No. 2800003104, version 5 dated 19.12.2017

2.INFRASTRUCTURE

- Electrical machines laboratory, Control, Measurement and Instrumentation laboratory, Power Electronics laboratory, Electric circuits and Electronic devices laboratory, Research and Development laboratory and Power System Simulation Laboratory are equipped with machineries, components, signal generating, power supply measuring, recording instruments and computer systems costing Rs.2 crores. The total built up area of laboratories is 1208.21 sq.m.
- Latest softwares on Power system analysis, Power system stability, Power world simulator and Power electronics are available to study, solve, design and simulate research on Power system and Power Electronics problems to experience the real time results.
- All the class rooms are equipped with computer systems, LCD and OHP to promote the Teaching-Learning process more effectively.

- Separate library facility for EEE students with more than two thousand books on core subjects and hard copies of IEEE Journals and magazines from 1999 are available for reference. Staff and students can access the softcopy of Journals, proceedings published by IEEE, Elsevier, ASME, Springer, Mc Graw Hill.
- All laboratories are provided with sufficient computing facilities, printing facility with internet connection to simulate laboratory experiments.

3.STAFF

- Teams of well qualified, and experienced 25 faculties with cadre ratio as per AICTE, are guiding the students to attain the best educational objectives.
- Excellent research environment promotes the staff and students to participate, present and publish their research works in the National/International Journals and National/International conferences.
- Facility and experienced faculty available for guiding Ph.D.scholars.
- Staff development Programme / Faculty development programme / Workshop/ Seminar are organized regularly to share the knowledge of our experienced faculty with parent institution and other colleges staff and students and Industrial persons.

4.RESEARCH AND DEVELOPMENT

- The Research and Development section is doing research on Industrial Power Harmonics and mitigation and interact with industries in measuring, recording, analyzing and designing of filters for reducing harmonics with the help of Power Quality analyzer, as per IEEE standard.
- Consultancy work on 'Industrial Harmonic Study' and 'Energy Audit' is being carried out regularly by the experienced professors.

5.STUDENTS

- Students secured 108 University Ranks in B.E.-EEE (1998 to 2018) and 18 University Ranks in M.E.-Power Systems Engineering (2007 to 2018) with **Gold medal** in 2000 (UG - EEE) and in 2011 (PG - Power Systems Engineering). Sweety Jain of 2005-2009 batch student secured 2nd rank in Anna University Examination in 2009 among 8500 students who completed degree and out of 240 Engineering colleges all over Tamil Nadu.
- IEEE student's chapter which was started in the year 1999, continuously conducting number of student technical programme. Guest lecturers from industries have been arranged periodically to promote Industry-Institute Interaction and to bridge the gap between curriculum and latest trend in industry. The college received appreciation award for IEEE Student Chapter Activities from IEEE, Madras Section for the year 2015 and 2016. The EEE department recognized as IEI Best Division Award for the Academic year 2016-2017.
- To promote innovation, latest trends in industry and employability skills, student's professional activities are conducted every year in the name of symposium and conferences.
- Workshop/Seminar is regularly conducted for students to meet out the curriculum objectives.
- Inplant trainings are arranged for second and third year students to have hands on training with industry. Industrial visits are arranged every semester to know about the various process taking places in industry.
- Placement oriented training programme were conducted every semester right from the first year to develop soft skills, attitude, aptitude, self confidence, communication skills, interview skills etc, so as to face the campus placement programme organized by the college. Professional Trainers from software companies, Bangalore, Chennai are being invited for such training programme.

K.L.N. COLLEGE OF ENGINEERING, POTTAPALAYAM – 630 612

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

FACULTY LIST

S.No.	Name of the Faculty	Designation	Mobile No.	Email Id
1.	Dr.S.M.Kannan	Professor & Head	9442035859	smkeeeklnce@gmail.com
2.	Dr.S.Venkatesan	Professor	9790672188	vensenn@yahoo.com
3.	Dr.K.Gnanambal	Professor	-	gnans_balu@rediffmail.com
4.	Dr. S.Parthasarathy	Professor	9443402901	sarathy_sps@yahoo.co.in
5.	Dr. S.Venkatanarayanan	Professor	9677320576	venjey@yahoo.co.uk
6.	A.Marimuthu	Associate Professor	9865002712	marimuthu_a@yahoo.com
7.	Dr. P.Loganthurai	Associate Professor	9952112115	loganthurai@yahoo.co.in
8.	Dr. M.Jegadeesan	Associate Professor	9524499063	m_jegadeesan07@rocketmail.co
9.	Dr. C.Vimala Rani	Associate Professor	-	jaysanjayvim@gmail.com
10.	S.Manoharan	AP(Sr.Gr.)	9715585524	sharpmano@yahoo.com
11.	M.Ganesh Kumari	AP(Sr.Gr.)	-	gnshkumari@gmail.com
12.	M.Jeyamurugan	AP(Sr.Gr.)	9600637578	jeyam3182@gmail.com
13.	Dr.A.P.S.Ramalakshmi	Assistant Professor	-	ramalakshmi.aps@gmail.com
14.	K.R.Jeyavelumani	Assistant Professor	-	krjeya35@gmail.com
15.	M.Balamurugan	Assistant Professor	9677564275	murugan.bala10@gmail.com
16.	T.Gopu	Assistant Professor	9487059842	gopu70@gmail.com
17.	R.Jeyapandiprathap	Assistant Professor	9788671119	jprathap03@gmail.com
18.	N.Vimal Radha Vignesh	Assistant Professor	9894965475	nvimalvignesh@gmail.com
19.	A.Manoj	Assistant Professor	9487526428	manojhails@gmail.com
20.	V.Sindhu	Assistant Professor	-	savisindhu@yahoo.co.in
21.	R.Sridevi	Assistant Professor	-	sridevirs87@gmail.com

PLACEMENT ACTIVITY – REMINDER

1. In the month of October every first year students must fill forms online in TATA CONSULTANCY SERVICES (TCS) campus recruitment using **nextsteptcs.com** website and must submit the following documents in the department.
   a. SSLC and HSC mark sheet photo copy at least 5.
   b. Latest passport size Photo at least 5.
   c. Current address proof with parent contact cell numbers.
   d. Create your own two E-mail id using Gmail.
   e. Resume with Scanned copy of passport size Photo.
   f. CT number registered in the TCS website.
2. Every semester end update CGPA in your resume and TCS profile.
3. An Engineering student from Electrical and Electronics Engineering should complete the following courses in order to enhance their software skills. This will be most helpful during their successful completion in Curriculum during 4th Semester and in the software company campus recruitment.
   a. Should complete **C Programming / Python Programming** before joining **2nd Semester**.
   b. Should complete **C++ Programming** before joining **3rd Semester**.
   c. Should complete **JAVA Programming** before joining **4th Semester**. (for the successful completion of object oriented Programming theory paper and laboratory during 4th Semester)
4. An Engineering student from Electrical and Electronics Engineering should complete the **Micro Processor, Micro Controller and Embedded Systems** courses before joining **5th Semester** in order to enhance their Hardware skills. This will be most helpful during their successful completion in Curriculum from 5th to 6th Semester and in the Core company campus recruitment. (for the successful completion of Micro Processor and Micro Controller theory as well as laboratory during 5th Semester and Embedded Systems during 6th Semester)
5. From 6th Semester Summer vacation onwards all should prepare for GATE Examination because all Engineering students from Electrical and Electronics Engineering should appear GATE Examination in order to settle in their life by pursuing higher education in the reputed colleges like IIT, NIT and Anna University or else to join as a Graduate Engineer trainee in a public sector companies like IOC, BHEL, PGCI etc.,
6. Before joining 7th Semester all should get any international certification programme course like OCJP, CCNA, etc., and upload the certification details in TCS campus commune website. This will be most helpful during the TCS campus and other MNC company recruitment.

Activity	Semester							
TCS Online form Filling in nextsteptcs.com	In the month of October							
Documents to be submitted in the EEE Department/ Placement Coordinator	a. SSLC and HSC mark sheet photo copy at least 5. b. Latest passport size Photo at least 5. c. Current address proof with parent contact cell numbers. d. Create your own two E-mail id using Gmail. e. Resume with Scanned copy of passport size Photo. f. CT number registered in the TCS website.							
Updating CGPA in resume and TCS online profile	✓	✓	✓	✓	✓	✓	✓	✓
C Programming	✓	✓						
C++ Programming		✓						
JAVA Programming			✓					
Micro Processor & Micro Controller				✓				
Embedded Systems					✓			
GATE / UPSC/ TNPSC Preparation			✓	✓	✓	✓	✓	
International Certification – OCJP / CCNA						✓	✓	

GENERAL REMINDERS

I. General

1. Keep at least 5 photocopies of birth certificate, ration card, Voters ID card, College ID card,Aadhar card, 10th ,+2 mark sheets, 10th /+2 Transfer Certificates,[* all proofs to be kept in your bag, in your house and in your mail, all kept in a water proof file-remember Chennai flood]. This will be required at anytime, anywhere.

2. Apply for Savings Bank account in any of the nationalized banks in first year. Apply for LIC schemes, saving schemes right from the first year. [*Refer]

3. Get Driving license during third year of your Degree course [*Refer]

4. Get Passport before the completion of 6th semester. [*Refer]

5. Always keep ID card issued by competent authority while moving from one city to another/ one state to another. It is better to wear ID card always.(except during bathing).

6. Never share your username and password of mail accounts to anyone even in your home/ to teachers/ friends. Never reply to un trusted mail/fake messages.

7. Share only legal, ethical, non-political, educational value based information/ photos/videos with your friends or any others through social media. Posting of illegal/political/unethical/ information/comments will spoil your career. Remember that all such communications in social media/mails are continuously monitored and recorded by intelligent agencies in the country and abroad, due to security threats.

8. Don't involve teasing of students of your class, juniors or seniors in the classrooms, laboratories or in hostels. Don't loan the cell phone to anyone. Also don't keep your cell phone easily accessible by anyone.

9. Don't send obscene messages or pictures through cell phones/ internet to anyone. Defaulters will be easily tracked by Cyber Crime Agencies. Don't purchase/loan someone's laptop/mobile phone, due to theft complaints.

10. Avoid two wheeler riding for long travelling, and night travelling. Wear helmet. Follow traffic rules. Lot of accidental deaths reported due to negligence of traffic rules. About 1.5lakhs of people lost their life in accidents in our country every year.

11. For any transaction of money, use cheques or bank accounts(for more than Rs. 10,000/-) because finding fake notes is difficult.

12. Always keep 10 passport and stamp size photographs, 10 no.s of revenue stamps, all ID proofs whenever going for banks/pass port office.

13. Keep at least email ids and good friendship of 25 students of your branch who have been placed in different companies. Collect background information on core/IT companies(minimum 25)

14. Develop good reading habit/read News papers daily/watch news channel daily/Watch films nominated for Oscar award.Watch channels like Discovery/Nat Geo/History/ any other news channels.(not more than an hour)

15. Speak in English only. Develop good writing skills by reading books.

16. Have a Desk top/Laptop, Printer before entering 5th semester.

17. Have internet facility in home for educational purpose. Keep all NPTEL material.

18. Keep all kind of stationary in your table for use at any time [pencil, sharpener, eraser, ball point pen of different colours, sketches, bell clip, stapler, single punch, tag, gum, knife,scissors,A4 paper, cello tap, emergency lamp, scale, protractor, compass, pen drive, CD, whitener, calculator, diary, stapler pin box]

19. Never transfer/ deposit money to any unknown mail. Beware of fraud/cheating by any one.

II. Education:

20. Download Anna University examination results immediately after the publication of result from AU website. Mark sheet attestation will not be given without the above copy

21. Always keep 5 copies of AU mark sheets , of each semester. Post it on your mail.

22. Discrepancy in mark sheets such as Name, Date of Birth, CGPA awarded, register number should be corrected immediately.

23. Always keep Rs 5,000/- in a semester for the payment of Book fee/AU exam fee/Training fee/purchase of competitive exam books/Educational tour/seminar/additional course/ certification course etc. Educate your parents for the above. This may be required in a particular month or in several months spread in a semester.

24. Enroll in IEEE membership during first/second year. Attend at least one programme at Chennai.

25. Collect 5 sets of AU question papers, subject wise, in a semester(within 10 days)

26. Prepare good quality Resume. Consult TPO, placed final year students. Resume preparation is an art that ensures your quality and getting jobs in reputed concern. Update your resume, monthly (by attending value added courses, online courses, co-curricular and extracurricular activities, publishing articles in conferences, symposium, technical events, journals, News papers, inplant training, internship, new languages learnt, project developed, industrial visits, social services participated etc.)

27. Attend any courses after consulting with HOD/senior staff to avoid courses not suited to your branch.

28. Purchase text/reference books every semester.

29. Purchase competitive exam books , like Objective type QB,GATE/TANCET/IES/IAS and prepare for the exams from second year onwards.

30. Collect aptitude/reasoning/analytical/numerical/verbal/test questions from the placed students or download from the website. For successful placement, preparation from the first year in the above topics is required.

31. Collect information like Product, clients, branches, head office, annual turnover, GM,CEO, etc of 25 core companies, and 25 software companies.

32. Attend atleast one seminar/workshop/ paper presentation contest per semester, applicable to your branch of study.

33. Plan your study for current subject/assignment work/observation work/record work/aptitude training for technical /non-technical daily/weekly/monthly.

34. Decide & justify clearly, your objective before 6th semester and plan accordingly. Options are placement(ON/OFF) in core/IT companies, higher studies/ civil services , parents business , start your own business. Confused mind never take a decision.

35. Attend inplant training(Min:one week,Max:One month) during semester holidays. Avoid industrial visit (Energy waste) and educational tour (Money waste).

36. Do mini project in second, third year of your study .Update these in final year. Project should be based on the need of the society/industry.

III. Health

37. Health is wealth. Read Dalailama statement on life of a man. We work hard , earn and save money sacrificing our health. Later we spent lot of money for medical treatment due to poor healthcare.

38. Have regular exercise either in the forenoon/evening. (an hour walk is must everyday).

39. Your food habits decides what you are and how long you will live with peace. Avoid junk foods/road side eatery. Use hot water for drinking.

40. Consult doctors in case of health problems. Periodical medical checkup, once in 6 months, is necessary for health and dental care. This may require Rs.2,000/- per year. Otherwise you need to pay a lot. It is advisable to stay in a house, within 500 metre (walkable distance) from a multispecialty hospital, otherwise 250 meters from any hospital. This is required to tackle emergency situations and also to avoid paying more for transport.

41. Avoid roaming/walking during summer/rainy season.

42. Attend yoga classes/ do meditation.

43. Apply group insurance medical policy at the age of 20.

44. Follow ethics and be Nationalistic.

Developing Leadership Skills

No one is a born leader; everyone can develop leadership skills and everyone can benefit from using them. First, take time to honestly analyze yourself. Learn to understand yourself. It's the first step to understanding others. Consider these important questions:

1. What kind of leader am I? One who helps to solve problems? A leader who helps people get along? How do others see me as a leader?
2. What are my goals, purposes, and expectations in working with this particular group?

Identify areas for improvement.

Ask yourself these questions:

1. Do I try to be aware of how others think and feel?
2. Do I try to help others perform to the best of their abilities?
3. Am I willing to accept responsibility?
4. Am I willing to try new ideas and new ways of doing things?
5. Am I able to communicate with others effectively?
6. Am I a good problem solver?
7. Do I accept and appreciate other perspectives and opinions?
8. Am I aware of current issues and concerns on campus or in my community?

Then after analyzing your strengths and weaknesses -- take action

Devise a strategy for upgrading your skills. Here are a few strategies to consider:

1) Communicate effectively:

Effective communication is dialogue. Barriers are created by speaking down to people, asking closed questions that elicit yes or no answers, using excessive authority, and promoting a culture that depends on unanimity. If your focus is winning the argument or if you react defensively to criticism, you'll create fear of openness and hinder the organization's growth.

Try these steps to effective communication:

• Listen actively - ask open questions. Be genuinely interested in what other's say.

• Thank people for their openness -- stress how much you value it -- even if you don't like specifically what is being said.
• Point to areas of agreement before jumping on areas of disagreement - this reduces defensiveness; members wont fear being "attacked."
• Set aside your authority to create an atmosphere of partnership to reduce fear in group members.
• Promote a culture of constructive dissent - though not to the point of paralysis.
• Portray disagreement as simply a difference of opinion. Get rid of the "I'm right, you're wrong" attitude.

2) Encourage enthusiasm and a sense of belonging. Show:
• Friendliness: others will be more willing to share ideas if you're interested in them as people too.
• Understanding: everyone makes mistakes. Try to be constructive, tolerant and tactful when offering criticism.
• Fairness: equal treatment and equal opportunity lead to an equally good effort from all group members.
• Integrity: members will take tasks more seriously if you show that you're more interested in group goals than your own personal gain.

3) Keep everyone working toward agreed upon goals:
• Remind everyone of the group's purposes from time to time. It's easy to become too narrowly focused and lose sight of the larger goals.
• Provide encouragement and motivation, by showing your appreciation for good ideas and extra effort.
• Harmonize differences and disagreements between group members by stressing compromise and cooperation.
• Involve everyone in discussions and decisions, even if asking for opinions and ideas means a longer discussion.

4) Get to know the people around you Everyone has different abilities, wants, needs, and purpose in life.
To get along with others and get results, you need to get to know them.
• Interact with group members as often as possible. The only way to get to know someone is through direct personal contact.
• Become familiar with every member of your group. Take note of each person's unique qualities and characteristics.

5) Treat others as individuals
Put your knowledge and understanding of each group member to work!
• Be aware of expectations. Everyone expects something different: recognition, a chance to learn, a chance to work with other people, etc.
• Be creative. A repetitious routine can cause boredom. A successful leader thinks of new and better approaches to old ways of doing things.
• Provide rewards. Recognition by the group is a source of personal satisfaction and positive reinforcement for a job well done.
• Delegate responsibilities. If everyone shares the work, everyone can share pride in the group's accomplishments. Let each member know what's expected of him/her, available resources, deadlines, etc.

6) Accept responsibility for getting things done
• Take the initiative. Why stand around and wait for someone else to get things started? Set an example.
• Offer help and information. Your unique knowledge and skills may be just what's needed.

• Seek help and information. Ask for advice if you need it. This will encourage group involvement and help accomplish group goals.
• Make things happen. By being decisive, energetic, and enthusiastic, you can and will help get things done!
• Know when and how to say “no.” If your time and resources are already committed, turn down extra tasks, but do it nicely.

7) Problem solve in a step - by-step way

Whether you are faced with a decision to make or a conflict to resolve, following a logical approach will help.

1. State the problem as simply and clearly as possible.
2. Gather all relevant information and available resources.
3. Brainstorm as many ideas or solutions as you can think of (with others if possible).
4. Evaluate each idea or solution and choose the best one.
5. Design a plan for using your idea or solution. Include a timetable, assigned roles, and resources to be used.
6. Follow up on your plan by asking if your idea worked and why or why not.

Tips for Effective Communication

Have courage to say what you think. Be confident in knowing that you can make worthwhile contributions to conversation. Take time each day to be aware of your opinions and feelings so you can adequately convey them to others. Individuals who are hesitant to speak because they do not feel their input would be worthwhile need not fear. What is important or worthwhile to one person may not be to another and may be more so to someone else.

Practice. Developing advanced communication skills begins with simple interactions. Communication skills can be practiced every day in settings that range from the social to the professional. New skills take time to refine, but each time you use your communication skills, you open yourself to opportunities and future partnerships.

Make eye contact. Whether you are speaking or listening, looking into the eyes of the person with whom you are conversing can make the interaction more successful. Eye contact conveys interest and encourages your partner to be interested in you in return.

Use gestures. These include gestures with your hands and face. Make your whole body talk. Use smaller gestures for individuals and small groups. The gestures should get larger as the group that one is addressing increases in size.

Manifest constructive attitudes and beliefs. The attitudes you bring to communication will have a huge impact on the way you compose yourself and interact with others. Choose to be honest, patient, optimistic, sincere, respectful, and accepting of others. Be sensitive to other people's feelings, and believe in others' competence.

Develop effective listening skills: Not only should one be able to speak effectively, one must listen to the other person's words and engage in communication on what the other person is speaking about. Avoid the impulse to listen only for the end of their sentence so that you can blurt out the ideas or memories your mind while the other person is speaking.

Enunciate your words. Speak clearly and don’t mumble. If people are always asking you to repeat yourself, try to do a better job of articulating yourself in a better manner.

Pronounce your words correctly. People will judge your competency through your vocabulary. If you aren’t sure of how to say a word, don’t use it.

Use the right words. If you’re not sure of the meaning of a word, don’t use it. Grab a dictionary and start a daily habit of learning one new word per day. Use it sometime in your conversations during the day.

Slow your speech down. People will perceive you as nervous and unsure of yourself if you talk fast. However, be careful not to slow down to the point where people begin to finish your sentences just to help you finish.

K.L.N. COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING
All India Installed Capacity (in MW) of Power Stations

This is a **list of states and territories of India by installed capacity of power utilities** with electricity generation mode break-up as on **31 January 2019** with figures in Megawatts.

ALL INDIA INSTALLED CAPACITY (IN MW) OF POWER STATIONS
(As on 31.03.2019)
(UTILITIES)

Region	Ownership/ Sector	Modewise breakup								Grand Total
		Thermal					Nuclear	Hydro	RES * (MNRE)	
		Coal	Lignite	Gas	Diesel	Total				
Northern Region	State	16344.00	250.00	2879.20	0.00	19473.20	0.00	8697.55	699.56	28870.31
	Private	21680.83	1080.00	558.00	0.00	23318.83	0.00	2514.00	13120.46	38953.29
	Central	12335.37	250.00	2344.06	0.00	14929.43	1620.00	8496.22	379.00	25424.65
	Sub Total	**50360.20**	**1580.00**	**5781.26**	**0.00**	**57721.46**	**1620.00**	**19707.77**	**14199.02**	**93248.25**
Western Region	State	21560.00	1040.00	2849.82	0.00	25449.82	0.00	5446.50	547.89	31444.21
	Private	34745.67	500.00	4676.00	0.00	39921.67	0.00	481.00	21864.76	62267.43
	Central	16502.95	0.00	3280.67	0.00	19783.62	1840.00	1620.00	666.30	23909.92
	Sub Total	**72808.62**	**1540.00**	**10806.49**	**0.00**	**85155.11**	**1840.00**	**7547.50**	**23078.94**	**117621.55**
Southern Region	State	19932.50	0.00	791.98	287.88	21012.36	0.00	11774.83	586.88	33374.07
	Private	11874.50	250.00	5322.10	273.70	17720.30	0.00	0.00	37491.40	55211.70
	Central	11235.02	2890.00	359.58	0.00	14484.60	3320.00	0.00	541.90	18346.50
	Sub Total	**43042.02**	**3140.00**	**6473.66**	**561.58**	**53217.26**	**3320.00**	**11774.83**	**38620.18**	**106932.27**
Eastern Region	State	6240.00	0.00	100.00	0.00	6340.00	0.00	3537.92	275.11	10153.03
	Private	6387.00	0.00	0.00	0.00	6387.00	0.00	399.00	1116.37	7902.37
	Central	14836.64	0.00	0.00	0.00	14836.64	0.00	1005.20	10.00	15851.84
	Sub Total	**27463.64**	**0.00**	**100.00**	**0.00**	**27563.64**	**0.00**	**4942.12**	**1401.48**	**33907.24**
North Eastern Region	State	0.00	0.00	497.71	36.00	533.71	0.00	422.00	233.25	1188.95
	Private	0.00	0.00	24.50	0.00	24.50	0.00	0.00	61.04	85.54
	Central	770.02	0.00	1253.60	0.00	2023.62	0.00	1005.00	30.00	3058.62
	Sub Total	**770.02**	**0.00**	**1775.81**	**36.00**	**2581.83**	**0.00**	**1427.00**	**324.29**	**4333.11**
Islands	State	0.00	0.00	0.00	40.05	40.05	0.00	0.00	5.25	45.30
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.38	7.38
	Central	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.10	5.10
	Sub Total	**0.00**	**0.00**	**0.00**	**40.05**	**40.05**	**0.00**	**0.00**	**17.73**	**57.78**
ALL INDIA	State	64076.50	1290.00	7118.71	363.93	72849.13	0.00	29878.80	2347.93	105075.86
	Private	74688.00	1830.00	10580.60	273.70	87372.30	0.00	3394.00	73661.40	164427.70
	Central	55680.00	3140.00	7237.91	0.00	66057.91	6780.00	12126.42	1632.30	86596.63
	Total	**194444.50**	**6260.00**	**24937.22**	**637.63**	**226279.34**	**6780.00**	**45399.22**	**77641.63**	**356100.19**

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GOVERNMENT OF INDIA

MINISTRY OF SKILL DEVELOPMENT AND ENTERPRENEURSHIP

DIRECTORATE GENERAL OF TRAINING

ADVANCED TRAINING INSTITUTE

(AN ISO 29990 : CERTIFIED)

Guindy, CHENNAI, Tamilnadu

Phone : 044-22501211/0252Fax : 044-22501460, Email : atichn@vsnl.com,atichn@yahoo.com, Url : www.atichennai.org.in

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ATI Chennai : Regular Course Training Schedule

Advanced Vocational Training Scheme (AVTS) - Short Term Programme

Annual Training calendar April 2018 – March 2019

(Short Term Skill Training Programme)

		GOVENMENT OF INDIA ,MINISTRY OF SKILL DEVELOPMENT ENTREPRENEURSHIP			
		NATIONAL SKILL TRAINING INSTITUTE(NSTI/ATI) ,CHENNAI-32			
		TRAINING CALENDER FOR 2019-2020			
		ELECTRICAL CONTROL MAINTENANCE			
Sl.No	Course Code	Name of the Course	Duration	From	To
1	10101	PROTECTIVE RELAYS, CIRCUIT BREAKERS & SWITCHGEAR PROTECTION	1	01.04.2019	05.04.2019
2	10103	PROTECTIVE RELAYS, CIRCUIT BREAKERS & SWITCHGEAR PROTECTION	1	10.06.2019	14.06.2019
3	10104	PROTECTIVE RELAYS, CIRCUIT BREAKERS & SWITCHGEAR PROTECTION	1	15.07.2019	19.07.2019
4	10105	PROTECTIVE RELAYS, CIRCUIT BREAKERS & SWITCHGEAR PROTECTION	1	19.08.2019	23.08.2019
5	10106	PROTECTIVE RELAYS, CIRCUIT BREAKERS & SWITCHGEAR PROTECTION	1	23.09.2019	27.09.2019
6	10107	PROTECTIVE RELAYS, CIRCUIT BREAKERS & SWITCHGEAR PROTECTION	1	21.10.2019	25.10.2019
7	10108	PROTECTIVE RELAYS, CIRCUIT BREAKERS & SWITCHGEAR PROTECTION	1	11.11.2019	15.11.2019
8	10109	PROTECTIVE RELAYS, CIRCUIT BREAKERS & SWITCHGEAR PROTECTION	1	09.12.2019	13.12.2019
9	10110	PROTECTIVE RELAYS, CIRCUIT BREAKERS & SWITCHGEAR PROTECTION	1	30.12.2019	03.01.2020
10	10111	PROTECTIVE RELAYS, CIRCUIT BREAKERS & SWITCHGEAR PROTECTION	1	03.02.2020	07.02.2020
11	10112	PROTECTIVE RELAYS, CIRCUIT BREAKERS & SWITCHGEAR PROTECTION	1	09.03.2020	13.03.2020
12	10201	OPERATION & MAINTENANCE OF POWER TRANSFORMER	1	08.04.2019	12.04.2019
13	10203	OPERATION & MAINTENANCE OF POWER TRANSFORMER	1	17.06.2019	21.06.2019
14	10204	OPERATION & MAINTENANCE OF POWER TRANSFORMER	1	22.07.2019	26.07.2019
15	10205	OPERATION & MAINTENANCE OF POWER TRANSFORMER	1	26.08.2019	30.08.2019
16	10206	OPERATION & MAINTENANCE OF POWER TRANSFORMER	1	28.10.2019	01.11.2019
17	10207	OPERATION & MAINTENANCE OF POWER TRANSFORMER	1	02.12.2019	06.12.2019
18	10208	OPERATION & MAINTENANCE OF POWER TRANSFORMER	1	06.01.2020	10.01.2020
19	10209	OPERATION & MAINTENANCE OF POWER TRANSFORMER	1	10.02.2020	14.02.2020
20	10210	OPERATION & MAINTENANCE OF POWER TRANSFORMER	1	16.03.2020	20.03.2020
21	10301	OPERATION & CONTROL OF INDUSTRIAL AC/DC MOTORS AND ITS DRIVES	1	22.04.2019	26.04.2019
22	10303	OPERATION & CONTROL OF INDUSTRIAL AC/DC MOTORS AND ITS DRIVES	1	24.06.2019	28.06.2019
23	10304	OPERATION & CONTROL OF INDUSTRIAL AC/DC MOTORS AND ITS DRIVES	1	29.07.2019	02.08.2019
24	10305	OPERATION & CONTROL OF INDUSTRIAL AC/DC MOTORS AND ITS DRIVES	1	09.09.2019	13.09.2019
25	10306	OPERATION & CONTROL OF INDUSTRIAL AC/DC MOTORS AND ITS DRIVES	1	30.09.2019	04.10.2019
26	10307	OPERATION & CONTROL OF INDUSTRIAL AC/DC MOTORS AND ITS DRIVES	1	04.11.2019	08.11.2019
27	10308	OPERATION & CONTROL OF INDUSTRIAL AC/DC MOTORS AND ITS DRIVES	1	25.11.2019	29.11.2019
28	10309	OPERATION & CONTROL OF INDUSTRIAL AC/DC MOTORS AND ITS DRIVES	1	13.01.2020	17.01.2020

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ATI Chennai : Regular Course Training Schedule

Advanced Vocational Training Scheme (AVTS) - Short Term Programme

Annual Training calendar April 2018 – March 2019

(Short Term Skill Training Programme)

29	10310	OPERATION & CONTROL OF INDUSTRIAL AC/DC MOTORS AND ITS DRIVES	1	17.02.2020	21.02.2020
30	10311	OPERATION & CONTROL OF INDUSTRIAL AC/DC MOTORS AND ITS DRIVES	1	23.03.2020	27.03.2020
31	10401	IMPORTANCE & APPLICATION OF ELECTRICAL SAFETY AT WORKPLACE & FIRST AID	1	29.04.2019	03.05.2019
32	10402	IMPORTANCE & APPLICATION OF ELECTRICAL SAFETY AT WORKPLACE & FIRST AID	1	27.05.2019	31.05.2019
33	10403	IMPORTANCE & APPLICATION OF ELECTRICAL SAFETY AT WORKPLACE & FIRST AID	1	01.07.2019	05.07.2019
34	10404	IMPORTANCE & APPLICATION OF ELECTRICAL SAFETY AT WORKPLACE & FIRST AID	1	05.08.2019	09.08.2019
35	10405	IMPORTANCE & APPLICATION OF ELECTRICAL SAFETY AT WORKPLACE & FIRST AID	1	16.09.2019	20.09.2019
36	10406	IMPORTANCE & APPLICATION OF ELECTRICAL SAFETY AT WORKPLACE & FIRST AID	1	14.10.2019	18.10.2019
37	10407	IMPORTANCE & APPLICATION OF ELECTRICAL SAFETY AT WORKPLACE & FIRST AID	1	16.12.2019	20.12.2019
38	10408	IMPORTANCE & APPLICATION OF ELECTRICAL SAFETY AT WORKPLACE & FIRST AID	1	20.01.2020	24.01.2020
39	10409	IMPORTANCE & APPLICATION OF ELECTRICAL SAFETY AT WORKPLACE & FIRST AID	1	24.02.2020	28.02.2020
		ELECTRONIC CONTROL MAINTENANCE			
40	20101	SIEMENS S7-400 PLC PROGRAMMING (TIA PORTAL) LEVEL- 1	1	01.04.2019	05.04.2019
41	20102	SIEMENS S7-400 PLC PROGRAMMING (TIA PORTAL) LEVEL- 1	1	10.06.2019	14.06.2019
42	20103	SIEMENS S7-400 PLC PROGRAMMING (TIA PORTAL) LEVEL- 1	1	15.07.2019	19.07.2019
43	20104	SIEMENS S7-400 PLC PROGRAMMING (TIA PORTAL) LEVEL- 1	1	14.10.2019	18.10.2019
44	20105	SIEMENS S7-400 PLC PROGRAMMING (TIA PORTAL) LEVEL- 1	1	04.11.2019	08.11.2019
45	20106	SIEMENS S7-400 PLC PROGRAMMING (TIA PORTAL) LEVEL- 1	1	30.12.2019	03.01.2020
46	20107	SIEMENS S7-400 PLC PROGRAMMING (TIA PORTAL) LEVEL- 1	1	03.02.2020	07.02.2020
47	20201	8051 PROGRAMMING AND APPLICATIONS	1	08.04.2019	12.04.2019
48	20202	8051 PROGRAMMING AND APPLICATIONS	1	06.05.2019	10.05.2019
49	20203	8051 PROGRAMMING AND APPLICATIONS	1	17.06.2019	21.06.2019
50	20204	8051 PROGRAMMING AND APPLICATIONS	1	01.07.2019	05.07.2019
51	20205	8051 PROGRAMMING AND APPLICATIONS	1	05.08.2019	09.08.2019
52	20206	8051 PROGRAMMING AND APPLICATIONS	1	28.10.2019	01.11.2019
53	20207	8051 PROGRAMMING AND APPLICATIONS	1	18.11.2019	22.11.2019
54	20208	8051 PROGRAMMING AND APPLICATIONS	1	17.02.2020	21.02.2020
55	20301	DIGITAL ELECTRONICS & THEIR APPLICATIONS	1	22.04.2019	26.04.2019
56	20302	DIGITAL ELECTRONICS & THEIR APPLICATIONS	1	24.06.2019	28.06.2019
57	20303	DIGITAL ELECTRONICS & THEIR APPLICATIONS	1	29.07.2019	02.08.2019
58	20304	DIGITAL ELECTRONICS & THEIR APPLICATIONS	1	20.01.2020	24.01.2020
59	20305	DIGITAL ELECTRONICS & THEIR APPLICATIONS	1	24.02.2020	28.02.2020
60	20306	DIGITAL ELECTRONICS & THEIR APPLICATIONS	1	23.03.2020	27.03.2020
61	20401	PIC MICROCONTROLLER PROGRAMMING AND APPLICATIONS	1	29.04.2019	03.05.2019

62	20402	PIC MICROCONTROLLER PROGRAMMING AND APPLICATIONS	1	13.05.2019	17.05.2019
63	20403	PIC MICROCONTROLLER PROGRAMMING AND APPLICATIONS	1	08.07.2019	12.07.2019
64	20404	PIC MICROCONTROLLER PROGRAMMING AND APPLICATIONS	1	16.09.2019	20.09.2019
65	20405	PIC MICROCONTROLLER PROGRAMMING AND APPLICATIONS	1	09.12.2019	13.12.2019
66	20406	PIC MICROCONTROLLER PROGRAMMING AND APPLICATIONS	1	27.01.2020	31.01.2020
67	20407	PIC MICROCONTROLLER PROGRAMMING AND APPLICATIONS	1	02.03.2020	06.03.2020
68	20501	COMPUTER HARDWARE MAINTENANCE AND NETWORKING	1	20.05.2019	24.05.2019
69	20502	COMPUTER HARDWARE MAINTENANCE AND NETWORKING	1	22.07.2019	26.07.2019
70	20503	COMPUTER HARDWARE MAINTENANCE AND NETWORKING	1	21.10.2019	25.10.2019
71	20504	COMPUTER HARDWARE MAINTENANCE AND NETWORKING	1	06.01.2020	10.01.2020
72	20505	COMPUTER HARDWARE MAINTENANCE AND NETWORKING	1	10.02.2020	14.02.2020
73	20601	BASICS OF COMPUTER & MS OFFICE	1	27.05.2019	31.05.2019
74	20602	BASICS OF COMPUTER & MS OFFICE	1	26.08.2019	30.08.2019
75	20603	BASICS OF COMPUTER & MS OFFICE	1	25.11.2019	29.11.2019
76	20604	BASICS OF COMPUTER & MS OFFICE	1	16.12.2019	20.12.2019
77	20605	BASICS OF COMPUTER & MS OFFICE	1	16.03.2020	20.03.2020
78	20701	PCB DESIGNING AND REWORKING	1	03.06.2019	07.06.2019
79	20702	PCB DESIGNING AND REWORKING	1	23.09.2019	27.09.2019
80	20703	PCB DESIGNING AND REWORKING	1	02.12.2019	06.12.2019
81	20704	PCB DESIGNING AND REWORKING	1	09.03.2020	13.03.2020

List of PSUs through GATE Exam

Name of PSU	Eligible Branches	Name of PSU	Eligible Branches	Name of PSU	Eligible Branches
ONGC Ltd.	XE, GG	MDL	ME, EE	NLC	ME, EE, EC, IN, MN, CE
NHPC Limited	EE	PSPCL Ltd	ME, EE, EC, IN, CE, CS	NALCO	ME, EE, EC, IN, MT, CE, MN, CS, CH
BPCL Limited	ME, EE, CH, IN, CE	OPGC Ltd	ME, EE, CE, C & I	RITES	CE, ME
CEL	EC, ME, EE, XE	IRCON International Ltd	EC, EE, IN	NPCCL	CE
Coal India Ltd.	ME, EE, MN, GG	BNPM	ME, EE, EC, CH	MECL	ME, CY, GG
POWERGRID	EE, CE, CS	AAI	EC, EE	NBCC Ltd.	CE
Indian Oil	CH, CE, CS, EE, EC, GG, IN, ME, MT, MN	BBNL	EC, EE, CS	PAPCL	EE, EC, ME, IN, CS
THDC India Ltd	ME, EE, CE	NFL	EE, CS, CH, IN, XE		
HPCL	ME, EE, CE, IN, CH, EC	GSECL	EE, ME, MT, C & I		
NTPC Limited	ME, EC, EE, IN	GAIL	ME, EE, IN, CH		

Lists of TOP 10 software companies to offer jobs in India

S. No.	Name of the Company	About the company	Head quarters	Revenue	No. of Employees	Website
1.	**Tata Consultancy Services**	TCS was established in 1968 and is spread across 47 countries.	Mumbai, India	US$ 13.44 billion	300,464	www.tcs.com
2.	**Cognizant Technology Solutions**	CTS was founded in year 1994 by Srilankan American Kumar Mahadeva.	Teaneck, New Jersey, United States	US$ 8.84 billion	178,000	www.cognizant.com
3.	**Infosys**	Infosys was founded in year 1981.	Bangalore, Karnataka	US$ 8.4 billion	160,405	www.infosys.com
4.	**Wipro**	Azim Premji is the Chairman & TK Kurien is the CEO of Wipro.	Mumbai, India	US$7.3 billion	146,053	www.wipro.com
5.	**Tech Mahindra**	Tech Mahindra was founded in year 1986	Mumbai	$4.09 billion	89,500	www.techmahindra.com
6.	**HCL Technologies**	HCL was founded by Shiv Nadar in year 1991.	Noida, Uttar Pradesh	US$335 million	90,190	www.hcltech.com
7.	**iGate**	iGate was earlier known as Patni Computer Systems and was founded by Narendra Patni and his wife.	Bridgewater, New Jersey, U.S	US$ 1.15 billion	31,000 +	www.igate.com
8.	**Mphasis**	MPhasis was founded by Jaithirth Rao in year 2000	Bangalore, India	US$1.0 billion	45,426 +	www.mphasis.com
9.	**Larsen &Toubro Infotech**	L & T Infotech was founded in year 1997	Mumbai	US$ 650 million	16,000+	www.lntinfotech.com
10.	**Oracle Financial Services Software Limited**	Oracle Financial Services Software Limited was earlier know as i-Flex Solutions Limited. It is spread across 130 countries around the globe and provides the IT solutions to the financial companies.	Mumbai, India	US$610 million	9,682	www.oracle.com

Lists of TOP 10 core companies to offer Electrical jobs

1 | Bharat Heavy Electricals Ltd.
Corporate office – New Delhi, India | **Establishment** – 1964 |
Business – Electrical equipments | **Website** – *www.bhel.com* |

Bharat Heavy Electricals Ltd established in the year 1964 is a leading power plant equipment manufacturer and has expertise in engineering, manufacture, construction, testing, designing and servicing of various products of the core sectors such as defense, power, industries etc. BHEL is among the top electrical companies in India and which has total 16 manufacturing divisions and four regional offices. It is currently operating more than 150 project sites across India and abroad.

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2 | Alstom
Corporate office – Levallois-Perret, France | **Establishment** – 1928 |
Business – Power generation and transmission | **Website** – *www.alstom.com* |

Alstom a multinational corporation is one of the best electrical companies in India and world, operating in hydroelectric power transportation and generation and it is active in many core industry sector. Company has a workforce of 9000+ employees in India and over 85000+ worldwide.

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3 | ABB
Corporate office – Zürich, Switzerland | **Establishment** – 1988 |
Business – Electrical equipments | **Website** – *www.abb.com* |

ABB holds interests in robotics and mainly in the automation and power areas. ABB is active in the field of electricity grids manufacturing and other technologies in the field of automation and power. ABB is one of the few giant electrical player at global level and among the largest engineering company in the world.

4| Siemens
Corporate office – Erlangen, Germany | **Establishment** – 1847 |
Business – Renewable energy, Power generation & transmission| **Website** – *www.energy.siemens.com* |

Siemens a German conglomerate is rated one the finest electrical company in India. Company's product line includes generators, steam turbines, compressors, high-voltage switching products and many more. Siemens employees more than 86000 people worldwide and it is a leading supplier of energy related products worldwide.

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5 | Crompton Greaves
Corporate office – Mumbai, Maharashtra | **Establishment** – 1878 |
Business – Electrical | **Website** – *www.cgglobal.com* |

Crompton Greaves is a part of Avantha Group which is headquartered in Mumbai. CGL deals in manufacturing, marketing and designing of power transmission and generation related products. CGL has manufacturing units in Canada, France, Hungary, UK, US, Indonesia, Ireland, India and Belgium.

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6 |Bajaj Electricals Ltd.
Corporate office – Mumbai, Mharashtra | **Establishment** – 1938 |
Business – Electrical Appliances | **Website** – *www.bajajelectricals.com* |

Bajaj Electricals is a leader in the field of electrical equipment and headquartered in Mumbai. It is one of the top 5 electrical companies in India having 19 branch offices across India. Bajaj Electricals provides

complete range of consumer durable such as fan, electrical appliances, lighting which includes tubes, lamps etc.

7 | Eason Reyrolle
Corporate office – Bangalore, Karnataka | **Establishment** – 1986 |
Business – Electric Equipments & Industrial Consumables | **Website** – *www.easunreyrolle.com* |

Established in 1980 Easun Reyrolle is a Power Management Products, Transmission, Distribution & Industrial Application, Systems, Solutions and Services provider having significant presence in global market as reputed electrical products manufacturer.

8 | Schneider Electrical
Corporate office – Rueil Malmaison, France | **Establishment** – 1981 |
Business – Electric Equipment | **Website** – *www.schneider-electric.co.in* |

Schneider Electric a French company established in the year 2000 is among the top electrical companies in India which is involved in energy management. Company has a workforce of more than 17000 employees and has 31 global manufacturing Plants.

9| Wipro Lighting
Corporate office – Pune, Maharashtra | **Establishment** – |
Business – Lamps, Luminaires and Accessories | **Website** – *www.wiprolighting.com* |

Wipro lightings a part of Wipro group and a leading electrical company in India producing Lamps, luminaries and accessories. Company's product portfolio comprises of high end lighting control and architectural dimming system, high intensity discharge lamp Luminaries, brightness management lighting products etc.

10| Kelvin Electrical
Corporate office – Al-Ain, U.A.E | **Establishment** – 2005 |
Business – | **Website** – *www.kelvin-electrical.com* |

Kelvin Electrical LLC founded in 2005 is based in United Arab Emirates (UAE). Kelvin Electrical deals in Cable Management Systems, Interior, Architectural, Exterior and Special lighting, Cable Support Systems, Raised Floor, Wiring Accessories etc.

K.L.N. COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Lists of core companies to offer Electrical jobs in India

Types of Electrical Core Companies

1. **Electrical motors and Generators**
2. **Consultancy (Electrical Engineering)**
3. **Electrical appliances**
4. **Electrical components companies**
5. **Lighting & luminaries**
6. **Power Generation**
7. **Electric wires & Cables**
8. **Electrical exporters**
9. **Measurements & Instrumentation**
10. **Power Distribution**
11. **Transformers**
12. **Green Energy Companies in India**
13. **Internationally renowned MNC'S**
14. **Top 20 core companies in India to offer electrical jobs**
15. **Exclusive Government jobs for Electrical Engineers**

Electrical motors and Generators

1. Ajay Engineers http://www.ajayengineers.com
2. All India Electric Motor Manufacturers' Association http://www.aiemma.com/
3. Aqua Brand Submersible Sewage Pump http://www.aquapumps.com
4. Compact http://www.compactlighting.net
5. Crown Electric Company http://www.crown-gear.com
6. Lawkim http://lawkimindia.com/
7. MMC Electric Company http://www.dynafluxindia.com
8. MS Enterprises and Trimega Power Corporation http://www.msein.com
9. National Electrical Industries - Ahmedabad. http://www.elmomachines.com/
10. Numeric Power Systems http://www.numericups.com
11. Pranshu Electricals http://www.pranshuelec.com/
12. Reva Industries http://www.reva.com/
13. Rotomag Motors & Controls Pvt. Ltd. http://www.rotomag.com
14. Rudrashakti Electronics http://www.rudrashakti.com
15. Sanjay Diesels - Diesel Generating Sets. http://www.dgsets.com/
16. Venus Industrial Corporation http://www.venusind.com/
17. A-One Industries. http://www.aoneindustries.com/contactus.html

Consultancy (Electrical Engineering)

1. APJ Projects http://www.apjprojects.com
2. Consolidated Consultants and Engineers Pvt. Ltd http://www.consolidatedconsultants.com
3. DSON Enterprises http://www.dsonenterprises.com
4. Eltech Engineers http://www.eltechindia.com/
5. John Mech-El Technologies (P) Ltd http://www.johnmech-el.com/
6. Mandvi Electric Works http://www.bicserve.com/

7. Miraj Instrumentation Services http://www.mirajinstrumentation.com
8. PG Associates http://www.engineeringconsultant.in
9. Power Gem Engineers - Consultants in Power Generation. http://www.powergem.com/
10. Secon Engineers http://www.seconindia.com
11. Shanti Enterprises Electricals Limited http://www.shantielectricals.com
12. Shashi Electricals http://www.shashielectricals.com
13. SK Systems http://www.sksystem.com
14. Tata Consulting Engineers http://www.tce.co.in
15. Nutronics India http://www.nutronicsindia.com/

Electrical appliances

1. Ajay Industrial Corporation http://www.ajayindustrial.com/
2. Ankit Electricals http://www.ankitelectricals.com
3. A.P.C. System & Products Pvt. Ltd http://www.apcsp.com
4. Arka Trading & Services http://www.mfdplaza.in
5. Bajaj Electricals Ltd - Part of Bajaj Group. http://www.bajajelectricals.com/
6. Electroil http://www.electroil.com/
7. Eveready Industries India Ltd http://www.evereadyindustries.com/
8. Graftec india http://graftec.trade-india.com
9. Indexelectronics http://www.indexelectronics.com
10. Khaitan Group http://www.khaitan.com/
11. Lloyd Electric & Engineering Limited http://www.lloydengg.com/
12. Modern Electrical Stores http://www.modernelectricalsindia.com/
13. Needo electronics and electricals pvt. Ltd. http://www.needoindia.com
14. Picasso home products http://www.picassoappliances.com/
15. Polor Industries Ltd http://www.polarinc.com/
16. Rajshree India Ltd. http://www.rajshreefans.com
17. Shilpa Electricals http://www.shilpaelectricals.com/
18. Super Impex http://www.superimpex.com
19. Tri Star Engineering Industries http://www.tristarengg.com
20. Vijay Electricals http://www.vijayelectricalspune.com/
21. Vxl Technologies Ltd. http://www.vxldesign.com
22. XtremeWorx http://www.xtremeworx.net

Electrical components companies

1. Ace Bimetalliks India Pvt. Ltd. http:// www.aceelectricals.com
2. Aditron India Pvt. Ltd. (Engineering Division) http://www.aiplen.com
3. Admir Ovens http://www.admir.com
4. Arvind Anticor Ltd http://www.picklingplant.com
5. Asiatic Electronic Industries. http://www.asiatic-india.com/
6. Axis Electrical Components India Pvt. Ltd. http://www.axis-india.com
7. Balar Marketing Pvt. Ltd http://www.allelectricalproducts.com/
8. Bhartia Industries Limited http://www.bchindia.com
9. Brass Copper & Alloy (I) Ltd. http://www.hexworldwide.com
10. Brightech Valves and Controls Pvt. Ltd. http://www.brightechvalves.com
11. Caltech Engineering Services http://www.caltechindia.com
12. Color Design India http://www.colordesigntech.com/
13. Consult Techniques (I) Pvt. Ltd http://www.consulttechnique.com/

14. Deki Electronics Ltd. http://www.dekielectronics.com
15. Elpro International Limited http://www.elproindia.com/
16. Elymer http://www.elymer.com
17. E S Electronics (India) Pvt. Ltd http://www.energysaversindia.com/
18. Finetech Engineering Corporation http://www.finetechindia.com
19. Gayatri Control, Ahmedabad http://www.gayatricontrol.com/
20. Gemscab Industries Ltd http://www.gemscab.com/
21. Hallmark Electronics http://www.hallmarkelect.com/
22. India International House Ltd http://www.builderhardware.com/
23. Jaykrishna magnetics pvt.ltd http://www.jkmagnetics.com
24. Leotech Group http://www.leotechindia.com/
25. Maxx Mobile Phone Accessories Pvt. Ltd http://www.maxmobile.co.in
26. Mehta Engineering Enterprise http://www.mehtaswitch.com
27. Mehta Tubes Ltd http://www.mehta-group.com/
28. Mellcon Engineers http://www.mellcon.com
29. Micromot Controls http://www.micromotcontrols.com
30. Muskaan Engineers http://www.electricitysaver.com/
31. Neelam Import Pvt. Ltd. http://www.cellking.org
32. Onload Gears http://www.onloadgears.com/
33. Orton Engineering Pvt. Ltd, Thane http://www.ortonengineering.com/
34. Persang Alloy Industries http://www.webmasterindia.com/persangalloy
35. PMT Engineers http://www.pmtengineers.com
36. Powercap Systems (Madras) Pvt. Ltd http://www.transformersindia.com/
37. Powertek Equipment Company http://www.powertekindia.com/
38. Pragati Electrocom Pvt. Ltd http://www.pragatielectrocom.com/
39. Pran Electronics Pvt. Ltd. http://www.pranelectronics.com
40. Precicraft Components India Pvt. Ltd http://www.precicraft.com/
41. Prima Automation India Pvt. Ltd http://www.prima-automation.com/
42. Rittal India Pvt Ltd http://www.rittal-india.com
43. Sanghi Yantra Udyog http://www.skyuindia.com/
44. SKN - Bentex Group of Companies. http://www.sknbentex.com/
45. South India Industrial Suppliers http://siis-india.com/bus_bar_support.html
46. Square Automation Pvt. Ltd http://www.squareautomation.com/
47. Sudhir Switchgears http://www.sudhirswitchgears.com
48. Syntron Controls http://www.syntron-controls.com
49. Torque Master Tools Pvt. Ltd http://www.torquemasterindia.com/
50. United Core http://www.unitedcores.com/
51. Utiliti Controls http://www.utiliticontrols.com/
52. valrack modular systems pvt.ltd http://www.valrack.com
53. Wavetronics http://www.wavetronicsindia.com
54. Rane Holdings Limited http://www.rane.co.in

Lighting & luminaries

1. A.K. Electricals http://www.akelectricals.com/
2. APCO India http://www.indiabizclub.net/Electrical/APCO_INDIA.html
3. Aquascape engineers http://www.fountainsnozzles.com
4. Arihant Enterprises : http://www.arihantsecurityindia.com/

5. Atlas Electricals www.indiabizclub.net/Electrical/ATLAS_ELECTRICALS.html
6. Baliga Lighting http://www.baliga.com/
7. Crompton Greaves Limited. http://www.cglonline.com/
8. Decon Lighting http://deconlighting.com
9. GE Lighting India http://www.gelighting.com/india/index.html
10. Jain Industrial Lighting Corporation http://www.indiamart.com/jilco/
11. Jayanta Lamp Industries Pvt.Ltd : http://www.jayantagroup.com
12. Kuber Lighting Pvt Ltd http://www.kuber.biz
13. Litray Lighting : http://www.litraylighting.com/
14. Mindscreen Pvt. Ltd. http://www.mindscreenfilms.com/
15. Peralites http://www.indiabizclub.net/Electrical/PEARLITES.html
16. Sam International http://www.indiamart.com/
17. Shyam Electricals - http://www.shyamelectricals.com/
18. Hpl Electric & Power Pvt.Ltd http://www.hplindia.com

Power Generation

1. Advance Engineering Company - http://www.advanceengineering.com/
2. APGENCO http://www.apgenco.com/
3. Birla Power Solutions Limited http://www.birlapower.com
4. Dyna Hitech Power Systems Ltd http://www.dynahitech.com
5. Essar Group http://www.essar.com/Group/group.asp
6. Essar Power Ltd. http://www.essar.com/
7. Jindal Steel & Power Ltd. http://www.jindalsteelpower.com
8. Kaiga Atomic Power Station http://www.npcil.org/docs/kaigaps.htm
9. Kakrapar Atomic Power Station http://www.npcil.org/docs/kaps.htm
10. Kirloskar Electric Co http://www.kirloskar-electric.com/
11. Lanco Industries http://www.lancogroup.com/groups/kpower/kpower.html
12. Madras Atomic Power Station (MAPS) http://www.npcil.org/
13. Magnum Power Generation Ltd http://www.magnumgrouponline.com/power/
14. Narora Atomic Power Station http://www.npcil.org/docs/naps.htm
15. National Thermal Power Corporation (NTPC) http://www.ntpc.co.in
16. NEPC India Ltd http://www.nepcindia.com
17. PTC India http://www.ptcindia.com
18. Rajasthan Atomic Power Station (RAPS) http://www.npcilraps.com/
19. Rajasthan Renewable Energy Corporation Limited (RRECL) http://www.rrecl.com/
20. Reliance Energy http://www.rel.co.in
21. Tarapur Atomic Power Station http://www.npcil.org/docs/taps.htm
22. Tata Electric Companies http://www.tata.com
23. Tata Power http://www.tatapower.com/
24. Techno Instrument India Pvt.Ltd web site url: http://www.tiiindia.com/
25. Torrent Power web site url: http://www.torrentpower.com/
26. Uttar Pradesh Power Corporation Ltd http://www.uppcl.org/
27. ABB Ltd www.abb.co.in/
28. Adani Power Ltd www.adanipower.com/
29. Aplab Ltd www.aplab.com/
30. BF Utilities Ltd www.bfutilities.com/
31. CESC Ltd. www.cescltd.com/

32. CMI Ltd. www.cmilimited.com.au/
33. DLF Power Limited www.eipowertech.com/dlf_power_limited.htm
34. DPSC Ltd www.dpscl.com/
35. Energy Development Company Ltd www.energy.com.ph/
36. Entegra Ltd www.entegra.co.in/
37. GMR Infrastructure Ltd www.gmrgroup.in/
38. Gujarat Industries Power Company Ltd www.gipcl.com/
39. GVK Power & Infrastructure Ltd www.gvk.com/
40. HBL Power Systems Ltd www.hbl.in/
41. Indowind Energy Ltd www.indowind.com/
42. Indo power projects Ltd www.indopowerprojects.in/
43. Jaiprakash Power Ventures Ltd www.jppowerventures.com/
44. Kalpataru Power Transmission Ltd www.kalpatarupower.com/
45. KSK Energy Ventures Ltd www.ksk.co.in/
46. National Wind & Power Corpn. Ltd www.nationalwind.com/
47. Neyveli Lignite Corpn. Ltd www.nlcindia.com/
48. NHPC Ltd. www.nhpcindia.com/
49. NTPC Limited www.ntpc.co.in/
50. Power Grid Corpn. Of India Ltd www.powergridindia.com/
51. PTC India Ltd www.ptcindia.com/
52. Reliance Power Ltd www.reliancepower.co.in/
53. Savant Infocomm Ltd www.savant-infocomm.com/
54. Sun Source (India) Ltd www.sunsource.in/about_us.htm
55. Suryachakra Power Corpn. Ltd www.suryachakra.in/
56. Suzlon Energy Limited www.suzlon.com/

Electric wires & Cables

1. Aksh Optifibre Limited http://www.akshoptifibre.com/
2. Anant Distributors Private Ltd. http://www.proflexcable.com/
3. Brimson Cables Private Ltd http://www.brimsoncable.com/
4. Capital Cables India Limited - http://www.indiantrade.com/cci/
5. Colt Cables Private Limited http://www.coltcables.com/
6. Cords Cable Industries Ltd http://www.cordscable.com/
7. Delton Cables Limited - http://www.deltoncables.com/
8. Fort Gloster Industries Limited http://www.glostercables.com/
9. Kaydour Cables India http://www.kaydourcables.com
10. KEI Industries Limited http://www.kei-ind.com/
11. Lapp India http://www.lappindia.com/
12. National Cable Industries http://www.nationalcables.com/
13. Navinbhai Cables Private Ltd http://www.ncplindia.com/
14. Neolex Cables http://www.neolexcable.com/
15. North Eastern Cables Private Ltd //www.khetangroup.com/
16. Novoflex Marketing Private Limited. http://www.novoflexgroup.com/
17. Polycab Wires Private Limited http://www.polycab.com/
18. Q-Flex Cables Limited http://www.qflexcable.com/
19. Ravin Cables limited - Primecab brand of cables. http://www.primecab.com/
20. Relemac India http://www.relemacindia.com

21. RollRing Industries - Calicut, Kerala. http://www.rollring.com/
22. Samdaria Electricals http://www.samdariaelectricals.co.in/
23. Satish Enterprises http://www.satishenterprise.com/
24. Shree Nakoda Cables Private Limited. http://www.nakodacables.com/
25. Skytone Electricals (India) http://www.skytonecables.com/
26. Surbhi Cables Industries Private Limited. http://www.indiamart.com/surbhi/
27. Surbhi Telelink Pvt. Ltd http://www.surbhiindia.com/
28. Torrent Cables Ltd http://www.torrentcables.com/
29. Universal Cables http://www.universalcablesltd.com
30. Usha Martin http://www.ushamartin.com
31. Weather Crafts Ltd http://www.weathercraft.com/
32. Finolex Cables Limited http://www.finolex.com

Electrical exporters

1. Arbariya steels http://www.arbariya.com/
2. Bajaj International Pvt. Ltd. http://www.bajajinternational.com/
3. Biax http://www.biaxmetals.com/
4. Brightech Valves and Controls Pvt Ltd http://www.brightechvalves.com
5. Dynamic Scaffolding & Equipment Co http://www.dynamicscaffolding.com/
6. Excel Metal And Engg. Industries http://www.excelmetal.net
7. Impex Trading Company http://www.impextradingco.com
8. Miltop Trading Company http://www.miltop.com/
9. Om(India)Exports http://omindiaexpo.com
10. Oriental Export Corporation http://www.indialinks.com/oriental/
11. Sevana Electrical Group http://www.sevana.com/
12. Veejay Lakshmi Engineering Works Limited http://www.veejaylakshmi.com
13. Vishal Electromag Industries http://www.vishalmotor.com
14. Vaibhav Electricals http://www.vaibhavelectricals.com
15. Industrial Forging Industries http://www.ifi-india.net/
16. Imperial Brass Component http://electronics-electrical.exportersindia.com
17. M/s Horizon Exports http://www.horizonexport.net
18. Golden Crest Marketing Network Pvt. Ltd. http://www.aceenergy.co.in/
19. Shree Krishna Enterprises http://www.shreekrishnaenterprises.co.in/
20. Sahiba International Trading Company http://www.sahibainternational.com
21. Pushpak Metals web site url: http://www.pushpakmetals.com/
22. IEEMA http://www.ieema.org
23. ELSTER METERING (P) LTD http://www.elstermetering.com/
24. Shivam Electronics http://www.shivamelectronics.com
25. SUBRTO http://www.subrtoburnishing.com/
26. Unitek Engineers http://www.unitekengineers.com
27. Euro Technologies http://www.eurotapes.in/

Measurements & Instrumentation

1. Active Control Pvt Ltd http://www.indiamart.com/activecontrols/
2. Autometers Alliance Limited. http://www.autometers.com/
3. EIP Bulk Control Pvt Ltd http://www.eipbulkcontrols.com/
4. IMP Power Limited http://www.imp-power.com/
5. Instruments International http://www.indorecity.com/ii/index.html

6. Kanji Precision Works http://www.kanjimeters.com
7. Mittal Enterprises http://www.indiamart.com/mittalenterprises/
8. Modsonic http://www.modsonic.com/
9. Nippon Instruments http://www.nipponinstruments.com/
10. Poonawala Electro Weigh http://www.peweigh.com
11. Prok Devices http://www.prokdvs.com
12. Shanti Instruments http://www.shanti-instruments.com
13. Texlab Industries http://www.texlabindia.com
14. Vasavi Electronics http://www.vasavi.com
15. VPL Infotech http://vplinf.com

Power Distribution

1. Areva T&D India http://www.areva-td.co.in/
2. BSES Yamuna Power Ltd and BSES Rajdhani Power Ltd. http://www.bsesdelhi.com/
3. Central Power Distribution Company of Andhra Pradesh Limited http://www.apcentralpower.com/
4. CESC Limited http://www.cescltd.com
5. Eastern Power Distribution Company of Andhra Pradesh Limited http://www.apeasternpower.com/
6. Elpro International Limited http://www.elproindia.com/
7. Gujarat Electricity Board http://www.gseb.com
8. Haryana Power Utilities http://www.haryanaelectricity.com/
9. Hubli Electricity Supply Company Limited (HESCOM) http://www.hescom.org/
10. Maharashtra State Electricity Distribution Company Limited http://www.mahadiscom.in
11. Natinal Hydroelectric Power Corporation of India http://www.nhpcindia.com
12. Noida Power Company Ltd http://www.noidapower.com
13. North Delhi Power Limited http://www.ndplonline.com/
14. Power Grid Corporation Of India http://www.powergridindia.com
15. Southern Power Distribution of Andhra Pradesh http://www.apspdcl.in
16. Transmission Corporation of Andhra Pradesh (AP TRANSO) http://www.aptranscorp.com/

Transformers

1. Emco Limited http://www.emcoindia.com
2. Golecha Electro Stampings. http://www.golecha.com/
3. Intaf India http://www.intafindia.com/
4. Kappa Electricals Private Ltd http://www.kappaelectricals.com/
5. Kotsons Transformers http://www.kotsons.com/
6. Mahindra Electrical Works http://www.mewindia.com
7. Marson's Electricals http://www.marsonselectricals.com/
8. P.M. Electronics Limited. http://www.indiamart.com/pme/
9. Prismatic India http://www.wind-it.com/
10. Raksan Transformers Private Ltd http://www.raksantransformers.com/
11. Roland Electronics and devices Private Ltd. http://www.redpl.com/
12. Sai Electricals http://www.saielectricals.com/
13. Tesla Transformers Limited http://www.teslatransformers.com/
14. Transformers and Electricals Kerala Limited. http://www.telk.com/
15. Transformers and Rectifiers (India) Ltd. http://www.jmtril.com
16. T.S. International http://www.transformers-reactors.com

Green Energy Companies in India

1. **Suzlon Energy:** Suzlon is of course the first company that comes to mind. They are one of the leading wind energy companies in India are one of the better known alternative energy companies in India. Here are some details from their website.

Conceived in 1995 with just 20 people, Suzlon is now a leading wind power company with:

- Over 16,000 people in 25 countries
- Operations across the Americas, Asia, Australia and Europe
- Fully integrated supply chain with manufacturing facilities in three continents
- Sophisticated R&D capabilities in Belgium, Denmark, Germany, India and The Netherlands
- Market leader in Asia, Suzlon Market Share (Combined with REpower) rose to 9.8% thereby making Suzlon 3rd * largest wind turbine manufacturing company in the world.

2. **Orient Green Power Limited:** Primarily engaged in the Wind and Biomass energy space. Currently wind constitutes the majority of their energy portfolio, so this is another one of India's wind energy companies. As of March 31, 2010, their total portfolio of operating projects included 193.1 MW of aggregate installed capacity, which comprised 152.6 MW of wind energy projects and 40.5 MW of biomass projects. Their portfolio of committed and development projects included approximately 815.5 MW of prospective capacity, which comprised an estimated 622.0 MW of wind energy projects, 178.5 MW of biomass projects and a 15.0 MW small hydroelectric project

3. **Indowind Energy Limited:** Indowind Energy Limited is also a wind energy company that develops wind farms for sale, manages the wind assets, and generates green power for sale to utilities and corporates. Turnkey implementation of Wind Power Projects, from concept to commissioning. Wind Asset Management Solution for installed assets, including operations, billing, collection of revenue to project customers. Supply of Green Power to Customers. CERs (Carbon Credit) Sales and Trading.

4. **Suryachakra Power Corporation Limited:** SPCL is the flagship company of Suryachakra Group with interests in Power generation – renewable energy (biomass, Solar, hydro, Wind) and Clean Technology / Ultra Super Critical Thermal Power Plants (coal, Gas), Engineering Consultancy and Urban infrastructure development activities. Suryachakra Power Corporation Limited has established 3 wholly owned subsidiaries for setting up of renewable energy (biomass) power projects and also acquired stake in Sri Panchajanya Power Private limited, which was setting up a 10 MW Biomass Power Plant at Hingoli, Maharashtra.

5. **NEPC India:** This is a Public Limited Company promoted by the Khemka Group with the primary objective of promoting wind energy. This successful Group has a multi crore turnover from diversified activities in the field of Power Generation from Wind Energy and manufacture and marketing of Wind Turbine Generator (a renewable energy device).

6. **Azure Power:** Azure Power is the green energy space as it is one of the solar energy companies in India. It is a solar power company, and they are supplying power to 20,000 people in 32 villages in Punjab.

7. **AuroMira Energy:** Auro Mira is also a green technology energy company that is private, and present in the Biomass, Small Hydel and Wind Sectors. It plans to develop over 1000 MW capacity by 2012. AME is presently focusing in Biomass, Small Hydro and Wind Sectors. AME plans to invest $ 900 Million to develop, own and operate over 1000 MW in clean energy in addition to WTG manufacture and to develop over 15000 acres of energy plantation in the next five years. AME intends to foray into other clean energy technologies, solar, bio-diesel etc. in the future.

8. **Husk Power Systems:** This is truly an alternate energy company which owns and operates 35-100 kW “mini power-plants” that use discarded rice husks to deliver electricity to off-grid villages in the Indian “Rice Belt

9. **RRB Energy Limited:** This company is in the field of Wind Power Generation, and is an ISO 9001:2008 and ISO 14001:2004 certified Company. RRBEL is also an Independent Power Producer having established wind farms of aggregate megawatt capacity.

10. **Moser Baer Solar Limited:** This is a subsidiary of Moser Baer that is one of the solar energy companies as well. The Group’s photovoltaic manufacturing business was established between 2005 and 2007 with the primary objective of providing reliable solar power as a competitive non-subsidized source of energy.

Internationally renowned MNC's to offer electrical jobs

Cisco, Hewlett Packard, Intel, AMD, IBM, Ford, General Electric, General Motors, Lockheed Martin, Lucent Technologies, Moog, Micron, Motorola, Nokia, Qualcomm, Rockwell, Sun Microsystems, Atto Technology, MTI and Texas Instruments.

Top core companies in India to offer electrical jobs

1. Bharat Sanchar Nigam Limited
2. Tata Consultancy Services
3. Bharti Airtel Limited
4. Wipro Ltd
5. Infosys Technologies Limited
6. Hewlett-Packard India
7. HCL Infosystems Limited
8. Reliance Communications Ltd
9. LG Electronics India Pvt Ltd
10. IBM India Pvt Ltd
11. Videocon Industries Ltd
12. HCL Technologies Limited
13. Satyam Computer Services Ltd
14. Siemens Ltd.
15. Samsung India Electronics Pvt. Ltd.
16. Mahanagar Telephone Nigam Ltd
17. Redington (India) Limited
18. Cognizant Technology Solutions
19. Idea Cellular Ltd
20. Videsh Sanchar Nigam Limited

Exclusive Government jobs for Electrical Engineers

1. ISRO
2. DRDO
3. BEL
4. BHEL
5. GAIL
6. SAIL
7. HAL
8. HPCL
9. NTPC
10. ONGC
11. IOCL
12. RRB
13. ECIL
14. APGENCO
15. APTRANSCO

Ref: http://www.regencyengg.com/eee_job_offer.html

ANNA UNIVERSITY

CENTRE FOR UNIVERSITY INDUSTRY COLLABORATION (CUIC)

A READY RECKONER FOR ENHANCING PLACEMENT ACTIVITIES

Dr. T .Thyagarajan, Director- CUIC

ROLES AND RESPONSIBILITIES OF PLACEMENT REPRESENTATIVES

- Collect list of HR contact details through your friends/ relatives/ Newspaper/ Faculty members/ Seniors /Alumni
- Pass on the HR Contact details to Placement Officer for sending official invitations
- Ensure Placement Officer contact details in all the Department Brochures, to have single point contact
- Keep the hard and soft copies of Curriculum and Syllabus
- Keep the contact details (Email, Landline No. & Mobile No.) of all your classmates
- Keepthecompletedetailsabouteachstudent(SSLC,HSC,SemesterwiseGPA,CGPA,DOB, Community, History & Current Arrears)
- Keep the contact details of other Placement Representatives
- Generate comprehensive Question Bank (Both Technical and Non-Technical)
- CollectAptitudeQuestions/GDTopics/InterviewQuestionstocreateQuestionBank
- Give training to the needy students
- Avoid spreading Rumors / False / Assumed information (This will lead to blacklisting)
- Avoid accepting false information / Track records from students (This will lead to rejection of offer)
- Avoid arguing with company HRs about previous year's branch preferences

TIPS TO FACE INTERVIEWS

- Maintain Professional Ethics and Moral Standards
- Read Frequently Asked Questions by interviewers and prepare the answers and practice them
- Prepare a Comprehensive Resume
- Practice with Mock Aptitude Test / Mock GD / Mock Interview etc.,
- Prepare well in fundamental & core subjects of respective branches
- Update database after declaration of revaluation / Arrear result
- View the placement Notice Board regularly
- As for as possible change of contact details should be avoided
- Visitthecompany'swebsitebeforeattendingthePrePlacementTalk(PPT)togetclearidea
- Avoid Wearing Jeans / T-shirts/ Cheppal / Half sleeves
- Be punctual for PPT as well as for Test /Interview
- Avoid standing outside or near the PPT hall
- Occupy first benches also, during the PPT
- Maintain Gender separation during the PPT
- Maintain discipline during PPT
- Avoid coming late to the PPT/test/interview
- Ask only relevant / valid questions during the PPT
- Carry Pen, Pencil, Eraser, Passport Size Photograph etc., for the test

- Avoid contacting the HR directly. It should be through CUIC only.
- Carry Resume / Copy of Mark Sheets / Community / Co-curricular / Extra-curricular Certificate etc for the interview
- Bring OBC Certificate for PSU interview
- Bring doctor certificate for differently abled physique
- Informatthebeginningitselfaboutcolourblindness,hearingdisordertoavoiddisqualificationatthe end.
- Attend the interview with clean dress (tucked-in) and neatly shaved to maintain dignity and decorum
- Wishtheinterviewerwhileenteringtheroom.Thanktheinterviewerbeforeleavingtheroom
- During the interview, relax and avoid showing your nervousness obvious
- Speak loudly, clearly; sit up straight; try to look at the interviewer's eyes when you speak to him/her
- Be honest in your approach
- Keep your answers brief and to the point.
- Do not give 'YES' or 'NO' replies.
- Don't discuss your personal difficulties
- Show your enthusiasm and willingness
- Exhibit your skills and abilities.
- AvoidpassingbadcommentsRemarksabouttheCollege/University/Staffduringtheinterview
- Prepare in advance, the questions you want to ask about the job and company
- Be available till the announcement of results
- Maintain silence during announcements of results
- Do not exhibit bad mannerism during the placement activity

FREQUENTLY ASKED QUESTIONS (FAQ)

- Tell me about yourself
- What are your long range goals, ambitions, future plans?
- What do you want to be doing 5 or 10 years from now?
- How do you feel that you can contribute to this job?
- What are your hobbies?
- What are your strengths? Your weaknesses?
- What are your big accomplishments?
- What are your special abilities?
- Why you think that you are suitable for this kind of job?
- What is your career goal?
- What do you know about our company?
- Why are you applying for a job with us?
- What salary do you expect?
- Do you have any plans to go back to school?
- What kind of job profile you enjoy the most, the least and why?
- I have interviewed others for this job, why should I give you the job?
- Would you be willing to take an aptitude test?
- Can you tell me any thing about yourself that you think I might want to know?
- What is the lowest salary you would accept?
- Can you handle criticism? How do you deal with it?
- Do you have any questions?

H.R.E XPECTATIONS

- Sincerity and honesty in the answers
- Attentiveness in listening to the questions
- Body language: gesture, posture, eye contact and confidence level
- Stress handling capability

- Positive approach in answering the questions
- Exhibition of skills, accomplishments and talents
- Enthusiasm and motivation level
- Command over communication skills
- Willingness and positive approach
- Exhibition of talents and accomplishments

POINTS DECIDED BY THE ORGANISATION

- Interview time and venue
- Decision on allowing identical branches
- Execution of Bond
- Change in eligibility criteria
- Place of work
- Percentage cut-off/ history of arrears / standing arrears
- Postponement of dates/cancellation
- The number of recruits, on-board date

USEFUL WEBSITES FOR APTITUDE, GD, TECHNICAL & HR INTERVIEW

http://www.indiabix.com
http://www.fresher world.com
http://www.placementpapers.net
http://www.allinterview.com
http://www.geekinterview.com
http://www.careersvalley.com
http://www.sampleplacementpapers.com
http://www.chetanasinterview.com
http://www.ittestpapers.com
http://www.indianfresher.com
http://www.freeplacementpapers.com
http://www.educationindiaworld.com
http://www.jobsnresults.com
http://www.psychometric-success.com
http://testfunda.com
http:/www.test4free.com
http://www.placementexpress.com

TECHNICAL
http://www. mechanicalengineeringblog.com
http://www.indiabix.com

USEFUL WEBSITES FOR ENGLISH COMMUNICATION

http://www.nonstopenglish.com
http://www.talkenglish.com
http://www.freeenglishnow.com
http://www.ego4u.com
http://www.focusenglish.com
http://www.bbc.co.uk/worldservice/learningenglish
http:/www.englishclub.com
http://www.easyenglish.com

http://learnenglish.britishcouncil.org
englishbee.net
http://www.english4today.com/free_content.cfm
http://www.english-the-international-language.com
http://www.teachingengtish.org.uk
http://esl.about.com
http://www.learnenglish.de
http://www.busuu.com
http://free-esl.com

'FACTS' TO PERFORM WELL IN THE PLACEMENTS

F - Clear the subjects in **F**irst attempt

- Learn **F**oreign Language (German, Japanese, French, Chinese)

A - Have right **A**ttitude

C - Have good **C**ommunication Skills

Maintain a **C**GPA above 7.5

T - **T**hink Positive

Develop creative **T**hinking

S - Be **S**agacious. Express your wisdom and Exhibit your Talents

K.L.N. College of Engineering.

How to prepare for Anna University Examinations.

Don't study just for passing the tests/exams. Ensure that you understood the concepts and you can explain/ demonstrate/justify/analyze/ answer/ argue/ design /implement/draw/develop any mathematical model, based on what you have learnt. If you are confident enough, you can successfully solve any question papers/technical interviews/competitive examinations at any time without fear/confusion/ delay. Remember that, you will be working in an environment, after graduation, where all the process/operation of machineries/equipment's are based on the basic scientific and engineering concepts what you have studied from first year to final year of your Engineering programme, where you are the only person to solve any problems aroused. You can't get away/escape from these. Hence, it is a lifelong learning, a wonderful experience.

Syllabus, books (at least 2-one Text books as prescribed in the syllabus, -one local author book) previous year question papers(atleast10), class notes, are your God/religion/food/ destiny/light. Ensure that you have studied all the contents of the syllabus, prepared correct answers for all questions in the AU question paper. Remember that ignoring any one word in the syllabus means you are losing 5 to 10 marks in each unit in the AU exams. Similarly, ignoring any one questions in the previous year question paper means you are losing 10 marks in each unit of AU exams. Don't expect that your Professor would cover 100% of the syllabus. Even if he/she has covered 100% of the syllabus don't think that he/she has covered 100% of each line in the syllabus. It is your responsibility to prepare 10% in excess of each lines in each units of the syllabus in addition to the contents taught by your Professors. This is possible by referring the books and the questions asked in the competitive exam books like GATE/TANCET/IES.

Plan your studies –right from the second week of the commencement of the classes till the semester examination is over. In a year, you will be attending the college only for 200 days(including theory/practical exams-8hours /day). You have 165 days (24 hours /day) away from the college. Prepare a time table from Monday-Friday. Take a rest on Saturday and Sunday. Allocate 3-4 hours in the evening for study.1-2 hours for completing assignments/observation/record note work. Remaining 2-3 hours for studying subjects A,B.(Mon),C,D(Tue)E,F(Wed), A,B(Thu),C,D(Fri),E,F(Sat or Sun).Each day, in addition to studying subjects for the current syllabus, you should refer competitive exam books (GATE/TANCET/IES/ Objective type questions –technical) corresponding to the current syllabus. This parallel preparation will ensure that you have prepared for state level and National level examinations there by you will be meeting the expectations of the Engineering Educational Objectives. Your preparation for AU examination should be vigorous (minimum), 15 days from the commencement of the exam and it should be maximum 2 days before the exam. You need to allocate for 8 hours per day during minimum days (early morning-6AM-10AM with a break for an hour, 10AM-12 Noon-sleep/rest,12 noon-2PM-study,2PM-5PM-sleep/rest,6PM-10PM –study). Repetition/memorizing is required to retain certain contents to improve confidence on the subject. During rest time you can have group discussion with your friends or you can teach slow learners, thereby you will gain more knowledge and also help others.

Presentation – AU Exam-General complaints by students that the valuation is not fair or poor valuation. Remarks of examiners that there is nothing in the answer paper. Parents may say that either "college is not good" or "it is a fate". Public may say "poor quality" and the experts may comment that "only 20% are employable". These statements will go on for centuries. Many students believes that they have written

right answers mostly (but many of them actually wrong) and few examiners assumed certain answers by students are wrong (but many of them are actually correct). It is 70% true that students are not presenting the answers well and it is 30% true that the valuation is not fair. But it is 95% true that the deserved students are getting expected results in most of the papers. This is because of good presentation. Good presentation involves many factors such as legible writing, good handwriting. answering correctly (100% correct),all answers with mathematical modeling/pictorial representation/drawing/layout/sketches with different colors, writing 7 pages for 16 mark questions with valid points and sketches, 4 pages for 8 marks with valid points and sketches/drawings/equations, characterizes,. Such students will solve problems correctly without any overwriting/ strikeouts. Simply, they do not cheat. These are the in-born qualities or developed over the years due to good habits, friendship, good character, obedience, hard work, well brought up by parents and blessing by God. Everyone can become like them if their attitude is good. Fear of God is the beginning of Wisdom. The examiners will know about your quality, just by referring the way you have answered Part-A- questions. A well prepared student would get a maximum of 18 out of 20. This impresses the examiner so that they will award a maximum of 14-16 for each part-B-question. Most of the students would answer wrongly in the Part-A-questions. This is due to their poor preparation during Class tests/internal tests, frequently taking leave, lot of diversion, skipping the classes for attending Co-Curricular/ /extra-curricular activities etc inside or outside the college.. Attending the classes is more important than attending college. Students are expected to attend 98%classes to maintain the continuity of the subjects learnt. One-day absence means it will take a week to study on his/her own. If he/she fails to study on his/her own to review the classes not attended means a loss of 10 marks in the exams.

Know well about Why one should apply for revaluation without /with Photocopy, schedule and fees to be paid. Sometimes a well-deserved students get low CGPA than he/she expected or even may fail. This may be due to error in valuation/data entry. Hence such students should not hesitate to apply for revaluation with/without photocopy. The parents should also be informed, all about these unfortunates (the misunderstanding between parents /sons/daughter/faculty may lead to unnecessary things). 90% of those deserved students who applied for revaluation with photo copy benefitted after revaluation. Ignorance/communication failure of these formalities, by deserved students, may damage their life. Some students failed in revaluation secured “O”grade in the REVIEW, shows some hope in the examination system and the better prospect of the students.

Need to maintain high CGPA in every semester. This is possible only when one gets “O” grade in all practical’s (from first to eighth semester).Those who are regular in attending the lab classes, submitting the observation and record note in time, disciplined behavior with staff and students in the class room/laboratory/campus etc. will impress the faculty in-charge of practical’s, so that he/she will help such students during regular lab classes. This will improve the students to do the lab experiments with confidence and fetch them to get more marks. This will reflect in internal assessment marks also. Classification of degree- First class with distinction- More than 8.5 CGPA (passed all subjects in first attempt), First class- More than 7.0 CGPA at the end of eighth semester, less than this would be second class.

.L.N. COLLEGE OF ENGINEERING
POTTAPALAYAM - 630 612 (11Km from Madurai City)
SIVAGANGAI DISTRICT, TAMILNADU, INDIA
(Sponsored by K.L.N. Sourashtra College of Engineering Council)

Approved by AICTE, New Delhi

All UG courses are permanently Affiliated to Anna University, Chennai.

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An ISO 9001:2015 Certified Institution. – A Sourashtra Linguistic Minority Institution

Accredited by NBA, New Delhi for B.E. – MECH, EEE, ECE, CSE & B.Tech – IT,

for Three Academic Years, 2016-2017 to 2018-2019 (i.e.) upto 30.06.2019.

Ph: 0452 – 6562171 & 2, 0452 – 2090971 & 2, Fax: 0452 – 2090070, Email – info@klnce.edu

VISION AND MISSION OF THE COLLEGE

VISION

To become a Premier Institute of National Repute by Providing Quality Education, Successful Graduation, Potential Employability and Advanced Research & Development through Academic Excellence.

MISSION

To Develop and Make Students Competent Professional in the Dynamic Environment in the field of Engineering, Technology and Management by emphasizing Research, Social Concern and Ethical Values through Quality Education System.

VISION AND MISSION OF THE DEPARTMENT

VISION

To become a high standard of excellence in Education, Training and Research in the field of Electrical & Electronics Engineering and allied applications.

MISSION

To produce excellent, innovative and Nationalistic Engineers with Ethical Values and to advance in the field of Electrical & Electronics Engineering and allied areas.

COURSES OFFERED

UG COURSES - B.E. / B.TECH

1. Mechanical Engineering (Accredited by NBA)
2. Electrical & Electronics Engineering (Accredited by NBA)
3. Electronics & Communication Engineering (Accredited by NBA)
4. Computer Science & Engineering (Accredited by NBA)
5. Information Technology (Accredited by NBA)
6. Automobile Engineering
7. Electronics & Instrumentation Engineering

PG COURSES

1. Master of Computer Applications
2. Master of Business Administration
3. M.E. – CAD / CAM
4. M.E. – Communication Systems
5. M.E. – Power Systems Engineering
6. M.E. – Computer Science & Engineering

K.L.N. COLLEGE OF ENGINEEING
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
Skills / Do you know

S.No.	Skill / Reminders	Priority	S.No.	Skill / Reminders	Priority
1.	Advanced Training Institute	Medium	51	Internshala	Medium
2.	Alumni	Medium	52	Internship	Medium
3.	Android Developer	Medium	53	IoT	High
4.	Anna University regulations	High	54	IVTL	Medium
5.	Aptitude Test	High	55	Jasmine	High
6.	Artificial Intelligence	High	56	JAVA	Medium
7.	Battery Technology	High	57	Journal Publications	Medium
8.	BEC	Medium	58	Judgment and Decision Making	Medium
9.	Big Data	Medium	59	Linear Integrated Circuits	High
10.	Block chain	Low	60	Mind Tree	Medium
11.	Board of Apprenticeship Training	Medium	61	Mobile Applications	Low
12.	Bond rules	Low	62	National Instruments	Medium
13.	BPO	Low	63	Negotiation	Medium
14.	BSNL	Medium	64	Networking	Medium
15.	C, C++	High	65	NPTEL	High
16.	Cadence	High	66	NSIC	Medium
17.	CAT	Low	67	Open source	Low
18.	CCNA	Medium	68	Passport	High
19.	Cloud computing	Medium	69	People Management	High
20.	Code vita	High	70	Power System Analysis	High
21.	Cognitive Flexibility	Medium	71	Programming Logic	Medium
22.	Complex Problem Solving	High	72	Project contest	High
23.	Conference Publications	High	73	Python Programming	High
24.	Co-ordinating with others	High	74	References	Medium
25.	Core companies	High	75	Resume	High
26.	Creativity	High	76	Robotics	Medium
27.	Critical Thinking	Medium	77	Second class	Medium
28.	Cyber security	Medium	78	Service orientation	Medium
29.	Data Mining	Medium	79	Skill rack	High
30.	Data pattern	High	80	Smart India Hackathon	High
31.	Data Science	Medium	81	Software companies	Medium
32.	Data Structure	Medium	82	Software Developer	Medium
33.	Digital Logic Circuits	High	83	Start up companies	Medium
34.	Driving License	High	84	STEP	Medium
35.	E mail writing	High	85	Symposium	Medium
36.	Electric Vehicle	High	86	TANCET	Medium
37.	Electrical Machines	High	87	TANGEDCO	Medium
38.	Electronic Devices & Circuits	High	88	TCS Ninja	High
39.	Embedded systems	High	89	Technical Aptitude	High
40.	Emotional Intelligence	Medium	90	Tell about yourself	High
41.	First class	High	91	Tessolve	High
42.	First class with Distinction	High	92	Texas Instruments	High
43.	GATE	High	93	TOFEL	Low
44.	GMAT	Low	94	Unmanned Aerial Vehicle	Medium
45.	GRE	Low	95	Unmanned Under water vehicle	Medium
46.	Hacker Rank	Medium	96	Very Large Scale Integrated	Medium

				circuits	
47.	IEEE	High	97	Vocabulary Test	High
48.	IEI	Medium	98	Web Applications	Low
49.	Industrial Automation	Medium	99	Wireless communication	Low
50.	Inplant Training	High	100	Zoho	Medium