



Department of Electronics and Communication Engineering

Circular

It is informed that the first BOS Meeting will be held on 20-10-2022 at 2.00. P.M in the HOD's chamber to discuss the following agenda points.

AGENDA

Item-1: Introduction of Board of Studies (BOS) Members.

Item-2: About the Department / Accreditations / Recognitions

Item-3: B.Tech ECE; R 22 Regulations

Item-4: B.Tech ECE I Year Course Structure and Detailed Syllabus.

Item-5: Course structure of B.Tech 2nd, 3rd & 4th Year

Item-6: Any other points with the permission of chair.



B. Sreenivasu

Prof. B. Sreenivasu

18.10.22

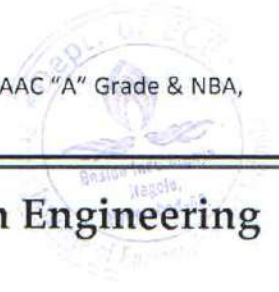
HoD & Chairman BOS
Head of the Department
Electronics & Communication Engineering
Sreyas Institute of Engineering and Technology
Beside Indu Aranya, Nagole, Hyderabad-500068.



Department of Electronics and Communication Engineering Board of Studies (BoS) Members

S.No	Name	Designation	Position
1	Mr. B.Sreenivasu	HoD, ECE	Chairman
2	Dr. M.Asharani	Prof of ECE, JNTUH, UCEH	University Nominee
3	Mr.TS Rashad	Scientist-F RCI, Hyderabad	Industrialist
4	Dr. J.Pandu	Prof, SIET	Specialized Faculty-1
5	Dr. V.A.Sankar Ponnappalli	Prof, SIET	Specialized Faculty-2
6	Mr. Ch.S.V.Maruthi Rao	Assoc.Prof, SIET	Specialized Faculty-3
7	Mr.V.Kranthi Kumar	Senior Data Science Analyst, TIGER ANALYTICS INC	Alumni Student
8	Dr.R.Murali Prasad	Professor, Department of ECE, Institute of Aeronautical Engineering, Hyderabad	Subject Expert-1
9	Dr.I.Sharath Chandra	Associate Professor, Department of ECE, Matrusri Engineering College, Hyderabad	Subject Expert-2
10	Dr.V Subha Seethalakshmi	Assoc.Prof, SIET	Faculty
11	Mr. G.Vijay Goud	Assoc.Prof, SIET	Faculty
12	Mrs. A.Sowjanya	Asst.Prof, SIET	Faculty
13	Mrs. S.Ashalatha	Asst.Prof, SIET	Faculty
14	Mr.N.Madhu	Asst.Prof, SIET	Faculty
15	Mrs.S.Satya Sravani	Asst.Prof, SIET	Faculty

Dr. S. Sai Satyanarayana Reddy
B.E., M.E., Ph.D.
PRINCIPAL
SREYAS INSTITUTE OF ENGG. AND TECH.,
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Nagole, Thattianaram, Hyd-68.



Department of Electronics and Communication Engineering

Minutes of meeting:

Minutes of the Meeting of Board of Studies (BOS), ECE Department was conducted on 20-10-2022 at 02:00 pm in HoD's Chamber.

AGENDA:

Item-1: Introduction of Board of Studies (BOS) Members.

Item-2: About the Department / Accreditations / Recognitions

Item-3: B.Tech ECE; R 22 Regulations

Item-4: B.Tech ECE I Year Course Structure and Detailed Syllabus.

Item-5: Course structure of B.Tech 2nd, 3rd & 4th Year

Item-6: Any other points with the permission of chair.

Points discussed:

Item-1: The BoS Chairman Mr. B.Sreenivasu welcomed all members and JNTUH Nominee Dr. M. Asha Rani was introduced by BoS Chairman to all members in the meeting.

Item-2: The BoS Chairman proposed R22 B.Tech, ECE Course Structure and Syllabus and informed the members that Course Structure is prepared following the guidelines of AICTE Model Curriculum and JNTUH.

Item-3: Dr. M. Asha Rani and Dr. I. Sharath Chandra suggested to re-organize the experiments in Elements of Electronics and Communication Engineering like, Cycle-A: Study experiments and Cycle-B: Practical experiments and adds few additional (Practical) experiments like PCB design and Soldering etc.

In addition, Dr. M. Asha Rani suggested re-writing the experiments title in EDC lab something like questionnaire to state the aim of each experiment and

M. Asha Rani

B. Sreenivasu

I. Sharath Chandra



removing redundant experiments after going through the Applied physics laboratory.

Dr. M. Asha Rani suggested to add few more courses in communication domain particularly in Profession electives example courses like error correcting codes and also suggested to add one more course in professional electives and make it four.

Dr. M. Asha Rani has suggested to balance the credits given to courses in Electronics domain and communications domain and madam has also suggested to list-out courses falling under electronics domain, communications domain, VLSI domain, Signal processing domain and RF domain etc..

Item-4: Dr. M. Asha Rani and Dr. R. Murali Prasad suggested to the chairman to interact with Professors in Mathematics to re-organize syllabi of Numerical methods and complex variables in II Year and discuss the possibility of adding probability theory in mathematical courses so that Stochastic Process concepts and Analog communication can be combined to frame another course with new title (tentative) Principles of communications.

In addition, Dr. M. Asha Rani, Dr. R. Murali Prasad and Dr. PVA Sankar suggested to change the title and syllabi of Network analysis and synthesis tentatively Network analysis and transmission lines.

Item-5: Dr. R. Murali Prasad suggested revising the syllabi of Numerical methods and complex variables since there are a redundancy in Unit-I topics: these topics already covered in Signals and Systems.

Item-6: Dr. P. V. A. Sankar suggested re-organizing the syllabus and including coordinate systems to Unit-1 and changing title of the course "Electromagnetic fields and waves" and also suggested that, In IV-I, instead of Microwave and Optical communications course, it is suggested to change the title as Microwave Engineering and in IV-I, Microwave and Optical communications lab is suggested to change the title as "Microwave Engineering" lab.



Item-7: Dr. R. Murali Prasad and Prof. B. Sreenivasu have suggested re-organizing the syllabi of Analog and Digital communication

In III-I, Dr. M. Asha Rani & Prof. B. Sreenivasu has suggested to replace IOT Architecture and Protocols (Mandatory course) with Data communications and Computer networks (Professional elective).

Dr. M. Asha Rani has suggested that a little change in the title of Numerical methods and complex variables be incorporated in II-I.

Item-8: As per the suggestions of the committee, the syllabus of Elements of Electronics and Communication Engineering and Electronic Devices and Circuits Lab is updated and accepted.

Item-9: Committee had reviewed I year I semester & II Semester course structure and the modifications are included as per the suggestions and accepted.

Item-10: Tentative course structure of II, III & IV years I & II semesters are reviewed by the committee and suggested few modifications in the Title of the courses and syllabus. The modifications have to get acceptance in the next BOS meeting before included in the final syllabus.

The Board of studies meeting was concluded with vote of thanks.

List of enclosures:

1. B.Tech in ECE Course Structure and Detailed Syllabus of I Year I Semester and II Semester.

[Handwritten signatures]



Department of Electronics and Communication Engineering

Board of Studies (BoS) Meeting Members Attended on 20-10-2022

S.No	Name	Designation	Position	Signature
1	Mr. B.Sreenivasu	HoD, ECE	Chairman	
2	Dr. M.Asharani	Prof of ECE, JNTUH, UCEH	University Nominee	
3	Mr.TS Rashad	Scientist-F RCI, Hyderabad	Industrialist	
4	Dr. J.Pandu	Prof, SIET	Specialized Faculty-1	
5	Dr. V.A.Sankar Ponnappalli	Prof, SIET	Specialized Faculty-2	
6	Mr. Ch.S.V.Maruthi Rao	Assoc.Prof, SIET	Specialized Faculty-3	
7	Mr.V.Kranthi Kumar	Senior Data Science Analyst, TIGER ANALYTICS INC	Alumni Student	ABSENT
8	Dr.R.Murali Prasad	Professor, Department of ECE, Institute of Aeronautical Engineering, Hyderabad	Subject Expert-1	
9	Dr.I.Sharath Chandra	Associate Professor, Department of ECE, Matrusri Engineering College, Hyderabad	Subject Expert-2	
10	Dr.V Subha Seethalakshmi	Assoc.Prof, SIET	Faculty	
11	Mr. G.Vijay Goud	Assoc.Prof, SIET	Faculty	
12	Mrs. A.Sowjanya	Asst.Prof, SIET	Faculty	
13	Mrs. S.Ashalatha	Asst.Prof, SIET	Faculty	
14	Mr.N.Madhu	Asst.Prof, SIET	Faculty	
15	Mrs.S.Satya Sravani	Asst.Prof, SIET	Faculty	



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**B.Tech. in ELECTRONICS AND COMMUNICATION ENGINEERING
TENTATIVE COURSE STRUCTURE, I & II YEAR SYLLABUS**

(R22 Regulations)

Applicable from AY 2022-23 Batch

I Year I Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1.	A1008	Matrices and Calculus	3	1	0	4
2.	A1001	Applied Physics	3	1	0	4
3.	A1503	C Programming for Engineers	3	0	0	3
4.	A1303	Engineering Workshop	0	1	3	2.5
5.	A1005	English for Skill Enhancement	2	0	0	2
6.	A1403	Elements of Electronics and Communication Engineering	0	0	2	1
7.	A1002	Applied Physics Laboratory	0	0	3	1.5
8.	A1006	English Language and Communication Skills Laboratory	0	0	2	1
9.	A1507	C Programming for Engineers Laboratory	0	0	2	1
10.	A1007	Environmental Science	3	0	0	0
11.		Induction Programme				
Total			14	3	12	20

I Year II Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1.	A1010	Ordinary Differential Equations and Vector Calculus	3	1	0	4
2.	A1003	Engineering Chemistry	3	1	0	4
3.	A1301	Computer Aided Engineering Graphics	1	0	4	3
4.	A1401	Basic Electrical Engineering	2	0	0	2
5.	A1405	Electronic Devices and Circuits	2	0	0	2
6.	A1508	Applied Python Programming Laboratory	0	1	2	2
7.	A1004	Engineering Chemistry Laboratory	0	0	2	1
8.	A1402	Basic Electrical Engineering Laboratory	0	0	2	1
9.	A1406	Electronic Devices and Circuits Laboratory	0	0	2	1
Total			11	3	12	20

B. Srinivas M. Srinivas



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II YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Analog Circuits	3	1	0	4
2		Network analysis and Transmission Lines*	3	0	0	3
3		Digital Logic Design	3	0	0	3
4		Signals and Systems	3	1	0	4
5		Probability Theory and Stochastic Processes*	3	0	0	3
6		Analog Circuits Laboratory	0	0	2	1
7		Digital logic Design Laboratory	0	0	2	1
8		Basic Simulation Laboratory	0	0	2	1
9		Constitution of India	3	0	0	0
		Total Credits	18	2	6	20

II YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Numerical Methods and Complex Variables*	3	0	0	3
2		Electromagnetic Fields and Waves*	3	0	0	3
3		Analog and Digital Communications*	3	0	0	3
4		Linear and Digital IC Applications	3	0	0	3
5		Electronic Circuit Analysis	3	0	0	3
6		Analog and Digital Communications Laboratory*	0	0	2	1
7		Linear and Digital IC Applications Laboratory	0	0	2	1
8		Electronic Circuit Analysis Laboratory	0	0	2	1
9		Real Time Project/ Field Based Project	0	0	4	2
10		Gender Sensitization Lab	0	0	2	0
		Total Credits	15	0	12	20

III YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Microcontrollers	3	1	0	4
2		Data Communications and Computer Networks*	3	0	0	3
3		Control Systems	3	1	0	4
4		Business Economics & Financial Analysis	3	0	0	3
5		Professional Elective – I	3	0	0	3
6		Microcontrollers Laboratory	0	0	2	1
7		Data Communications and Computer Networks Lab*	0	0	2	1
8		Advanced English Communication Skills Laboratory	0	0	2	1
9		Intellectual Property Rights	3	0	0	0
		Total Credits	18	2	6	20

Resonance *M. J. S.*



III YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Antennas and Wave Propagation	3	0	0	3
2		Digital Signal Processing	3	0	0	3
3		CMOS VLSI Design	3	0	0	3
4		Professional Elective - II	3	0	0	3
5		Open Elective - I	3	0	0	3
6		Digital Signal Processing Laboratory	0	0	2	1
7		CMOS VLSI Design Laboratory	0	0	2	1
8		Advanced Communication Laboratory	0	0	2	1
9		Industry Oriented Mini Project/ Internship	0	0	4	2
10		Environmental Science	3	0	0	0
		Total Credits	18	0	10	20

* Indicates tentative course title / Course syllabus is yet to be updated.

Environmental Science in III Yr II Sem Should be Registered by Lateral Entry Students Only.

IV YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Microwave Engineering*	3	1	0	4
2		Professional Elective - III	3	0	0	3
3		Professional Elective - IV	3	0	0	3
4		Open Elective - II	3	0	0	3
5		Professional Practice, Law & Ethics	3	0	0	2
6		Microwave Engineering Laboratory*	0	0	4	2
7		Project Stage - I	0	0	6	3
		Total Credits	15	1	10	20

IV YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1		Professional Elective - V	3	0	0	3
2		Professional Elective - VI	3	0	0	3
3		Open Elective - III	3	0	0	3
4		Project Stage - II including Seminar	0	0	22	9+2
		Total Credits	9	0	22	20

*MC - Satisfactory/Unsatisfactory

Professional Elective - I

EC511PE	Computer Organization & Operating Systems
	IoT Architectures and Protocols
EC513PE	Electronic Measurements and Instrumentation

Professional Elective - II

EC611PE	Digital Image Processing
EC612PE	Mobile Communications and Networks
EC613PE	Embedded System Design

Professional Elective - III

EC711PE	Radar Systems
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Manu M. S. Kumar



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EC712PE	CMOS Analog IC Design
EC713PE	Artificial Neural Networks

Professional Elective – IV

EC721PE	Network Security and Cryptography
EC722PE	Satellite Communications
EC723PE	Biomedical Instrumentation

Professional Elective – V

EC811PE	Artificial Intelligence
EC812PE	5G and beyond Communication
EC813PE	Machine learning

Professional Elective – VI

EC821PE	Multimedia Database Management Systems
EC822PE	System on Chip Architecture
EC823PE	Wireless sensor Networks

Open Electives

Open Elective (OE – I)	Open Elective (OE – II)	Open Elective (OE – III)
1. Fundamentals of Internet of Things	1. Electronic Sensors	1. Measuring Instruments
2. Principles of Signal Processing	2. Electronics for Health Care	2. Communication Technologies
3. Digital Electronics for Engineering	3. Telecommunications for Society	3. Fundamentals of Social Networks

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M. A. [Handwritten signature]



ELEMENTS OF ELECTRONICS AND COMMUNICATION ENGINEERING

B.Tech. I Year I Sem.

L T P C
0 0 2 1

Course outcomes: Students will be able to:

- CO 1: Identify the different components used for electronics applications
- CO 2: Measure different parameters using various measuring instruments
- CO 3: Know the connections of components
- CO 4: Understand different power supplies
- CO 5: Distinguish various ICs
- CO 6: Design basic circuits

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1	1	1	-	-	1	-	-	1
CO2	3	2	3	2	1	2	-	-	1	-	-	1
CO3	3	2	3	1	2	1	-	-	-	-	-	1
CO4	3	2	2	1	2	1	-	-	-	-	-	1
CO5	3	2	3	2	1	1	-	-	-	-	-	2
CO6	3	1	3	2	1	2	-	-	-	-	-	2

List of Experiments

Cycle - A:

1. Identify and test the different passive and active components.
2. Identify resistors values using color codes and find the types and values of capacitors.
3. Understand the breadboard connections.
4. Study the CRO functions and measure the amplitude, frequency and phase of given signal.
5. Analyze the function generator for various signal generations.
6. Differentiate various Digital ICs and Analog ICs.

Cycle - B:

1. Determine the voltage and current using voltmeter, ammeter and Multimeter.
2. Measure the equivalent resistance by connecting the resistors in series and parallel connection.
3. Create different Lissajous figures using CRO.
4. Determine the characteristics of Regulated power supply for different supply voltages.
5. Verify various gates module and write down the truth table of them.
6. Design a basic circuit by Soldering of components on bare PCB.
7. Know the available softwares for Electronics and communication application.

M. A. S.

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BASIC ELECTRICAL ENGINEERING

B.Tech. I Year II Sem.

L T P C
2 0 0 2

Prerequisites: Mathematics

Course Objectives:

- To understand DC and Single & Three phase AC circuits
- To study and understand the different types of DC, AC machines and Transformers.
- To impart the knowledge of various electrical installations and the concept of power, power factor and its improvement.

Course Outcomes: After learning the contents of this paper the student must be able to

- Understand and analyze basic Electrical circuits
- Study the working principles of Electrical Machines and Transformers
- Introduce components of Low Voltage Electrical Installations.

Course Objectives	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
To understand DC and Single & Three phase AC circuits.	3	2	1		2	-	-	1	2	-	1	2
To study and understand the different types of DC, AC machines and Transformers.	3	2	1	1	3	-	-	-	2	-	1	1
To impart the knowledge of various electrical installations and the concept of power, power factor and its improvement.	3	2	-		3	-	-	-	1	2	1	1

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Understand and analyse basic Electrical circuits	3	2	1	-	1	-	-	-	2	-	2	2
Study the working principles of Electrical Machines and Transformers	3	2	1	-	3	1	-	1	1	2	1	2
Introduce components of Low Voltage Electrical Installations.	3	2	1	1	3	2	-	-	1	0	2	2

UNIT-I:

D.C. Circuits: Electrical circuit elements (R, L and C), voltage and current sources, KVL&KCL, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits.

UNIT-II:

A.C. Circuits: Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor, Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance in series R-L-C circuit. Three-phase balanced circuits, voltage and current relations in star and delta connections.



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UNIT-III:

Transformers: Ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

UNIT-IV:

Electrical Machines: Construction and working principle of dc machine, performance characteristics of dc shunt machine. Generation of rotating magnetic field, Construction and working of a three-phase induction motor, Significance of torque-slip characteristics. Single-phase induction motor, Construction and working. Construction and working of synchronous generator.

UNIT-V:

Electrical Installations: Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement and battery backup.

TEXT BOOKS:

1. D.P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 4th Edition, 2019.
2. MS Naidu and S Kamakshaiah, "Basic Electrical Engineering", Tata McGraw Hill, 2nd Edition, 2008.

REFERENCE BOOKS:

1. P. Ramana, M. Suryakalavathi, G.T. Chandrasheker, "Basic Electrical Engineering", S. Chand, 2nd Edition, 2019.
2. D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009
3. M. S. Sukhija, T. K. Nagsarkar, "Basic Electrical and Electronics Engineering", Oxford, 1st Edition, 2012.
4. Abhijit Chakrabarthy, Sudipta Debnath, Chandan Kumar Chanda, "Basic Electrical Engineering", 2nd Edition, McGraw Hill, 2021.
5. L. S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press, 2011.
6. E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.
7. V. D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India, 1989.

Prasanna M. A. Sai



ELECTRONIC DEVICES AND CIRCUITS

B.Tech. I Year II Sem.

L T P C
2 0 0 2

Course Objectives:

1. To introduce components such as diodes, BJTs and FETs.
2. To know the applications of devices.
3. To know the switching characteristics of devices.

Course Outcomes: Upon completion of the Course, the students will be able to:

CO 1: Understand the fundamentals of electronic devices such as diodes and its applications

CO 2: Understand BJT and also the applications of BJT

CO 3: Analyze BJT under different modes such as CB, CE and CC configurations and derive its parameters.

CO 4: Understand types of FET as well as principle of operations along with its characteristics curve

CO 5: Analyze FET under different modes such as CS, CD, CG configurations and understand types of MOSFET's as well as MOS Capacitor.

CO 6: Understand applications of special purpose diodes along with its characteristics curve

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	-	-	-	1	1	-	-	-
CO2	2	1	1	1	1	-	-	1	1	-	-	1
CO3	2	1	1	1	1	-	-	1	1	-	-	1
CO4	2	-	1	2	1	-	-	1	1	-	-	1
CO5	2	3	2	1	1	-	-	1	1	-	-	1
CO6	2	3	2	1	1	-	-	1	-	-	-	1

UNIT - I

Diodes: Diode - Static and Dynamic resistances, Equivalent circuit, Diffusion and Transition Capacitances, V-I Characteristics, Diode as a switch- switching times.

UNIT - II

Diode Applications: Rectifier - Half Wave Rectifier, Full Wave Rectifier, Bridge Rectifier, Rectifiers with Capacitive and Inductive Filters, Clippers-Clipping at two independent levels, Clamper-Clamping Circuit Theorem, Clamping Operation, Types of Clampers.

UNIT - III

Bipolar Junction Transistor (BJT): Principle of Operation, Common Emitter, Common Base and Common Collector Configurations, Transistor as a switch, switching times.

UNIT - IV

Junction Field Effect Transistor (FET): Construction, Principle of Operation, Pinch-Off Voltage, Volt-Ampere Characteristic, Comparison of BJT and FET, FET as Voltage Variable Resistor, MOSFET, MOSTET as a capacitor.

UNIT - V

Special Purpose Devices: Zener Diode - Characteristics, Zener diode as Voltage Regulator, Principle of Operation - SCR, Tunnel diode, UJT, Varactor Diode, Photo diode, Solar cell, LED, Schottky diode.

TEXT BOOKS:

1. Jacob Millman - Electronic Devices and Circuits, McGraw Hill Education
2. Robert L. Boylestead, Louis Nashelsky- Electronic Devices and Circuits theory, 11th Edition, 2009, Pearson.



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REFERENCE BOOKS:

1. Horowitz -Electronic Devices and Circuits, David A. Bell – 5th Edition, Oxford.
2. Chinmoy Saha, Arindam Halder, Debaati Ganguly - Basic Electronics-Principles and Applications, Cambridge, 2018.

Pranav M. A. S.



BASIC ELECTRICAL ENGINEERING LABORATORY

B.Tech. I Year II Sem.

L T P C
0 0 2 1

Prerequisites: Basic Electrical Engineering

Course Objectives:

- To measure the electrical parameters for different types of DC and AC circuits using conventional and theorems approach.
- To study the transient response of various R, L and C circuits using different excitations.
- To determine the performance of different types of DC, AC machines and Transformers.

Course Outcomes: After learning the contents of this paper the student must be able to

- Verify the basic Electrical circuits through different experiments.
- Evaluate the performance calculations of Electrical Machines and Transformers through various testing methods.
- Analyze the transient responses of R, L and C circuits for different input conditions.

Course Objectives	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
To measure the electrical parameters for different types of DC and AC circuits using conventional and theorems approach	3	2	1	-	2	-	-	1	2	-	1	2
To study the transient response of various R, L and C circuits using different excitations	3	2	1	1	3	-	-	-	2	-	1	1
To determine the performance of different types of DC, AC machines and Transformers	3	2	-	-	3	-	-	-	1	2	1	1

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Verify the basic Electrical circuits through different experiments	3	2	1	-	1	-	-	-	2	-	2	2
Evaluate the performance calculations of Electrical Machines and Transformers through various testing methods	3	2	1	-	3	1	-	1	1	2	1	2
Analyse the transient responses of R, L and C circuits for	3	2	1	1	3	2	-	-	1	-	2	2



ELECTRONIC DEVICES AND CIRCUITS LABORATORY

B.Tech. I Year II Sem.

L T P C
0 0 2 1

Course Outcomes: Students will be able to

- CO 1: Acquire the knowledge of various semiconductor devices and their use in real life.
- CO 2: Design aspects of biasing and keep them in active region of the device for functional circuits
- CO 3: Acquire the knowledge about the role of special purpose devices and their applications.
- CO 4: Determine response of linear and non linear wave shaping circuits
- CO 5: Determine transistor DC characteristics
- CO 6: Design DC power supplies with regulation

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	-	2	-	3	-	-	3	3	-	-	1
CO2	1	-	2	-	3	-	-	3	3	-	-	1
CO3	1	-	2	-	3	-	-	3	3	-	-	1
CO4	1	-	1	1	1	-	1	-	-	-	-	1
CO5	1	1	1	-	1	-	-	-	-	-	-	1
CO6	2	2	2	1	1	-	-	-	-	-	-	1

List of Experiments (Twelve experiments to be done):

Verify any twelve experiments in H/W Laboratory

1. Analyze the V-I characteristics of PN junction diode under forward and reverse bias conditions and compute its cut-in voltage, dynamic forward and reverse resistances.
2. Analyze the operation of full-wave rectifier with and without filter and calculate its efficiency and ripple factor.
3. Design various Clipper circuits and plot the output waveforms at different reference voltages.
4. Design various Clamper circuits and plot the output waveforms at different reference voltages.
5. Determine the steady state output waveform of clampers for a square wave input.
6. Determine the Input and output characteristics of BJT in CB Configuration and plot the waveforms.
7. Determine the Input and output characteristics of BJT in CE Configuration and plot the waveforms.
8. Determine the Input and output characteristics of BJT in CC Configuration and plot the waveforms.
9. Determine the transfer and drain characteristics of MOS FET in CS Configuration and plot the waveforms.
10. Determine the transfer and drain characteristics of MOS FET in CD Configuration and plot the waveforms.
11. Verify the operation of transistor as a Switch.
12. Analyze the characteristics of Zener diode and verify how Zener diode acts as a voltage Regulator.
13. Obtain the V-I characteristics of Silicon Controlled Rectifier.
14. Observe the Characteristics of UJT and identify the negative region.
15. Obtain the V-I characteristics of Photo diode.

Major Equipment required for Laboratories:

1. Regulated Power Suppliers, 0-30V
2. 20 MHz, Dual Channel Cathode Ray Oscilloscopes
3. Functions Generators-Sine and Square wave signals
4. Multimeters, voltmeters and Ammeters
5. Electronic Components and devices

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