SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

QUESTION BANK

I SEMESTER

1901106 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Civil & Mechanical Engineering)

Regulation–2019

Academic Year 2022–23 ODD

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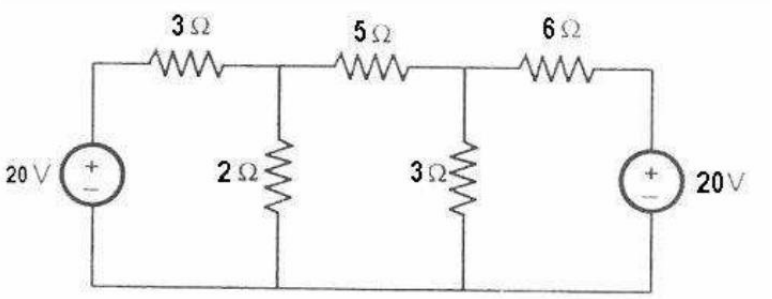
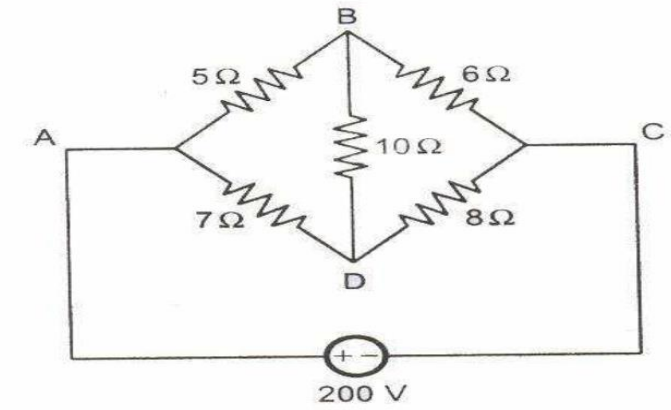
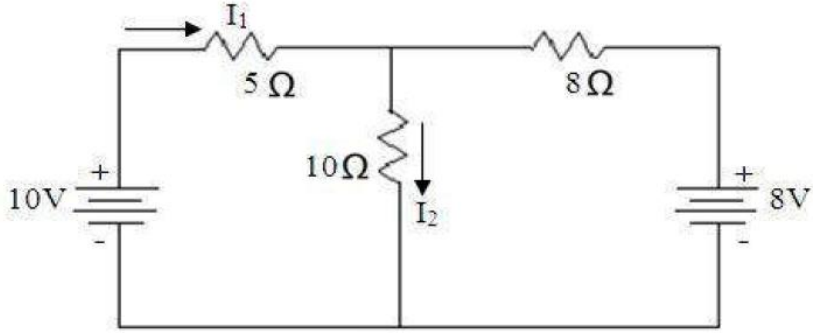
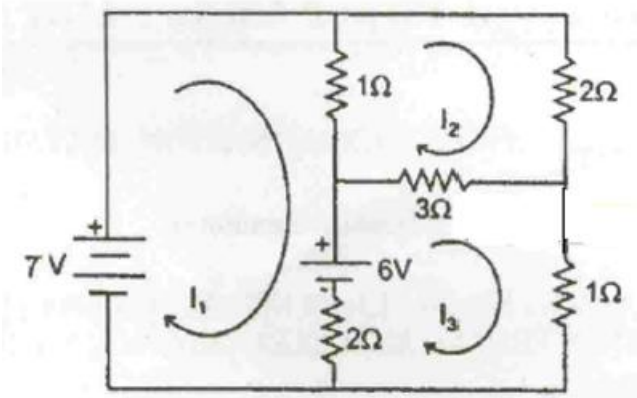
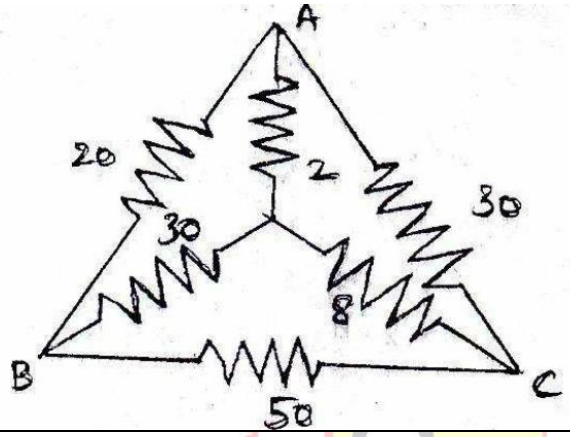
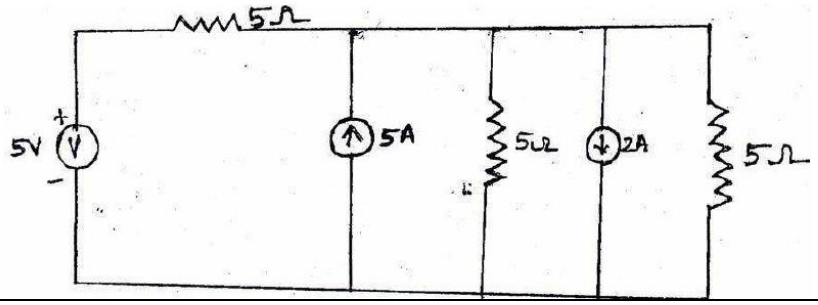
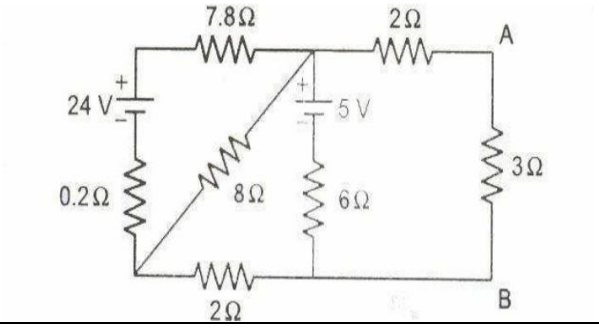
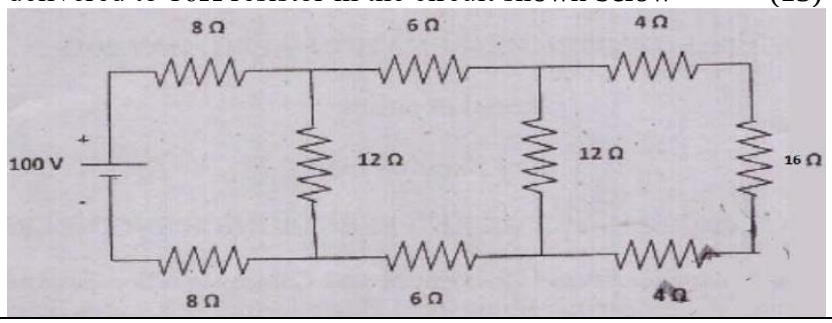
SUBJECT: 1901106 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

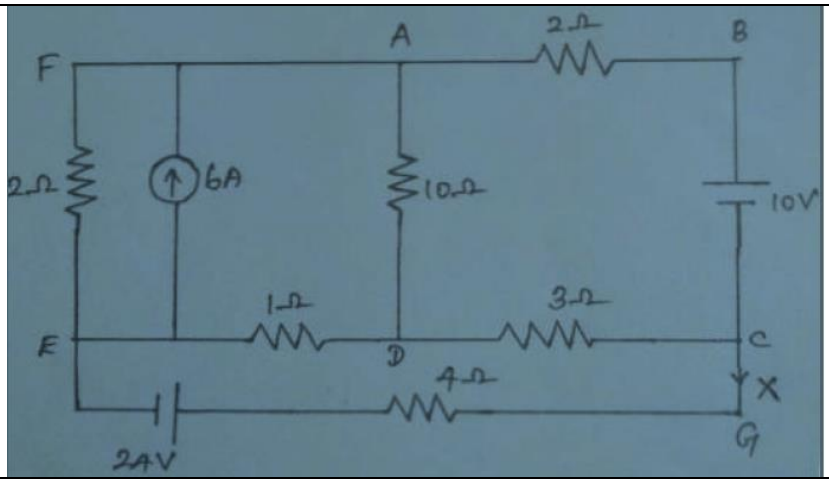
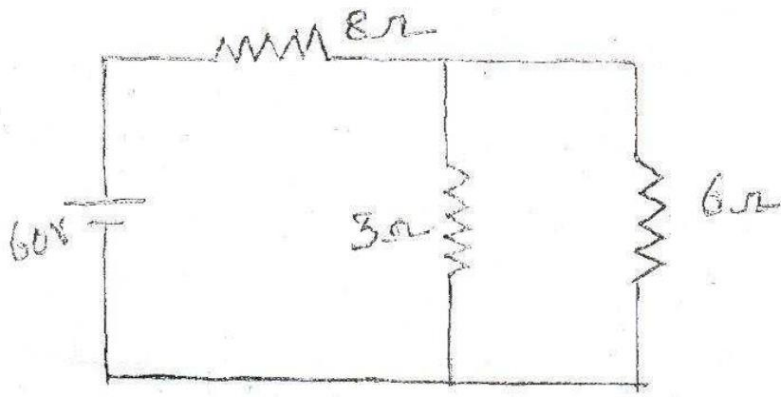
SEM / YEAR: I / I

UNIT-I: ELECTRICAL CIRCUITS & MEASURMENTS				
Fundamental laws of electric circuits – Steady State Solution of DC Circuits –Introduction to AC Circuits – Sinusoidal steady state analysis – Power and Power factor– Single Phase and Three Phase Balanced Circuits. Classification of instruments –Operating Principles of indicating Instruments.				
PART – A				
Q.No	**Questions**	**BT Level**	**Competence**	**Course Outcome**
1.	Explain how voltage source with a source resistance can be converted into an equivalent current source.	1	Remember	CO1
2.	Define active elements and passive elements.	3	Apply	CO1
3.	Under what condition AC circuit said to be resonant?	4	Analyze	CO1
4.	State the different types of instruments based on their operating principles	1	Remember	CO1
5.	Define power.	2	Understand	CO1
6.	Mention the two types of MI instruments.	5	Evaluate	CO1
7.	Write down the expression for effective resistance when three resistances are connected in series and parallel.	2	Understand	CO1
8.	State Kirchhoff's laws.	2	Understand	CO1
9.	What are the advantages of electromechanical measuring instruments?	1	Remember	CO1
10.	State Ohm's law.	5	Evaluate	CO1
11.	Three inductive coils each with resistance of 15Ω and an inductance of 0.03H are connected in star to a 3 phase 400V, 50Hz supply. Calculate the phase voltage.	1	Remember	CO1
12.	Define power factor.	4	Analyze	CO1
13.	Define real power.	2	Understand	CO1
14.	Define apparent power.	3	Apply	CO2
15.	Define RMS value.	4	Analyze	CO1
16.	State the principle of moving iron instrument.	1	Remember	CO1
17.	Define current.	6	Create	CO1
18.	Define the principle of moving iron instrument for attraction type.	6	Create	CO1
19.	List any three types of indicating instruments.	1	Remember	CO1

20.	Define power and power factor for single phase.	3	Apply	CO2
21.	Mention the errors in moving iron instruments.	1	Remember	CO1
22.	Two resistances of 4 ohm and 6 ohms are connected in parallel across 10v battery. Determine the current through 6-ohm resistance.	1	Remember	CO1
23.	Give the voltage and current equation for a purely resistance circuit.	2	Understand	CO1
24.	A 120Ω resistor has a specified maximum power dissipation of 1 W. Calculate the maximum current level.	2	Understand	CO1
	PART – B			
1.	Find the current through 5 ohm resistance using mesh current analysis. (13) 	1	Remember	CO1
2.	Find the current through 10-ohm resistance using mesh current analysis. (13) 	5	Evaluate	CO1
3.	(a) Fig.1 shows a two D.C source network, the branch current I_1 and I_2 are marked in it. By using Kirchhoff's law, calculate and examine the current I_1. (07)  (b) A series circuit has R=10Ω, L=50mH and C=100μF and is supplied and is applied with 200V, 50 Hz. Find and examine the value of: (1) Impedance (2) Current (3) Power (4) Power factor (5) Phase angle (6) Voltage drop across each element. (06)	6	Create	CO1

4.	Use mesh analysis to determine the three mesh currents in the circuit shown below. (13) 	3	Apply	CO1
5.	Find the Effective resistance across the terminal A & B. (13) 	2	Understand	CO1
6.	(a) Derive the expression for RMS and Average value of an alternating quantity (a sine wave). (04) (b) Compare series and parallel circuit. (05) (c) Three inductive coils each with resistance of 15Ω and an inductance of 0.03H are connected in star to a 3 phase 400V, 50Hz supply. Calculate the phase voltage. (04)	1	Remember	CO1
7.	Three similar coils connected in star, take a power of 1.5KW at a power factor of 0.2 lagging from a 3 phase, 400V, 50Hz supply. Calculate the resistance and inductance of each coil. (13)	2	Understand	CO1
8.	Derive the equation for given delta network transformation in to star network. (13)	1	Remember	CO1
9.	Find the total Current and total Resistance in the circuit given. (13) 	2	Understand	CO1
10.	Find the current through branch AB by using mesh current analysis. (13)	1	Remember	CO1

				
11.	With neat sketch describe the construction and principle of operation of Permanent Magnet Moving Coil (PMMC) type of instrument. Obtain the expression for its deflecting torque. List the merits and demerits of PMMC Instrument. (13)	4	Analyze	CO1
12.	(a) Determine the line current, power factor and total power when a three phase 400V supply is given to a balanced load of impedance (8+j6)Ω in each branch, is connected in star. (07) (b) State and explain Kirchhoff's Laws. (06)	4	Analyze	CO1
13.	Explain the working principle of repulsion type M.I instruments and derive its deflection torque. (13)	4	Analyze	CO2
14.	Obtain expression of power and power factor for three phase A.C star connected balanced load circuit. (13)	3	Apply	CO2
15.	Draw and explain the working principle of attraction type, repulsion type M.I instruments and derive its deflection torque. (13)	1	Remember	CO1
16.	With the help of a neat diagram, explain the construction and operation of induction type energy meter. (13)	2	Understand	CO1
17.	Explain the construction and operation of dynamo meter type watt meter. (13)	1	Remember	CO1
	PART – C			
1.	Calculate (i) equivalent resistance across the terminal of the supply (ii) total current supplied by the source (iii) power delivered to 16Ω resistor in the circuit shown below (15) 	5	Evaluate	CO1
2.	Determine the current 'X', power in the 4Ω resistance of the circuit shown below: (15)	6	Create	CO1

				
3.	Derive the equation for given star network transformation in to delta network. (15)	6	Create	CO3
4.	Consider the following network as shown in figure. Determine the power observed by the 6Ω. (15) 	5	Evaluate	CO2
5.	Draw and explain the working principle of attraction type, repulsion type M.I instruments and derive its deflection torque. (15)	5	Evaluate	CO2

UNIT-II: ELECTRICAL MACHINES

Construction - Principle of Operation - Basic Equations and Applications of DC Generators - DC Motors - Single & Three Phase Transformer - Single & Three Phase induction Motor – Synchronous Motor

PART – A

Q.No	Questions	BT Level	Competence	Course Outcome
1.	What is an electric generator?	1	Remember	CO3
2.	Mention the difference between core and shell type transformers.	2	Understand	CO1
3.	List the major parts of DC machine.	5	Evaluate	CO3
4.	Write down the condition for maximum efficiency in case of DC generator.	1	Remember	CO4
5.	Write down the power equation of DC motor.	2	Understand	CO4
6.	Give the emf equation of a transformer and define each term.	1	Remember	CO2
7.	What is greatest advantage of DC motor?	1	Remember	CO3
8.	What is Transformer?	2	Understand	CO2

9.	Why single-phase induction motor is not self-starting?	6	Create	CO2
10.	What is Back e.m.f?	1	Remember	CO2
11.	Define Transformation ratio of a Transformer?	1	Remember	CO3
12.	In a single-phase transformer Np=350 turns, Ns=1050 turns, Ep=400V.Find Es	3	Apply	CO3
13.	What are all the applications of DC motor?	3	Apply	CO4
14.	What are the types of transformers based on the construction?	4	Analyze	CO1
15.	What is the function yoke in a dc machine?	5	Evaluate	CO4
16.	Give the emf equation of DC generator.	3	Apply	CO1
17.	What are all the two types of excitations?	6	Create	CO4
18.	What is meant by residual magnetism?	4	Analyze	CO4
19.	Give the types of DC generator.	2	Understand	CO3
20.	List out the applications of various types of generators.	4	Analyze	CO2
21.	Give the torque equation of a DC motor.	1	Remember	CO2
22.	What is the principle of DC motor?	1	Remember	CO3
23.	Calculate the generated e.m.f, by a 4 pole, wave- wound armature having 45 slots with 18 conductors per slot when driven at 1200 rpm and the flux per pole is 0.016Wb.	4	Analyze	CO4
24.	List out the types of single-phase induction motors.	2	Understand	CO4
	PART – B			
1.	Draw a neat sketch of a DC generator and label the component parts. Name the material used for each component part. (13)	1	Remember	CO1
2.	Derive the torque and speed equation of dc motor. (13)	1	Remember	CO3
3.	(a) Derive the emf equation of a dc generator. (06) (b)Derive the emf equation of a transformer. (07)	1	Remember	CO3
4.	(a) A single phase 2200/250V, 50Hz transformer has net core area of 36cm2 and maximum flux density of 6Wb/m^2. Calculate the number of primary turns and secondary turns. (06) (b) A DC shunt generator supplies a load of 7.5KW 200V. Calculate the induced emf if the armatu resistance is 0.6Ωand the field resistance is 80Ω. (07)	1	Remember	CO2
5.	With the neat sketches, explain the working principle and the construction of DC motor. Also derive the torque and speed equation. (13)	2	Understand	CO3
6.	Explain the principle and working of a single-phase transformer. (13)	4	Analyze	CO3
7.	Why a single-phase induction motor is not self-starting? Explain the working of single-phase induction motor. (13)	2	Understand	CO3
8.	Explain the construction and working principle of capacitor start and capacitor run single phase induction motor. What are its advantages and practical applications? (13)	2	Understand	CO3
9.	Explain the characteristics of a dc shunt motor. Sketch the graphical representation of the concerned characteristics. (13)	4	Analyze	CO3

10.	Draw the circuit diagram of the following three types of DC motors and write the relationships among the current and voltages. (a) Separately DC motor (b) Shunt motor (c) Series motor. (13)	5	Evaluate	CO4
11.	Explain the working principle of DC generator with neat diagram. (13)	4	Analyze	CO2
12.	With diagram describe construction and operation of single-phase transformer. (13)	6	Create	CO2
13.	Give the types of DC generator. List out the application of its.(13)	3	Apply	CO3
14.	How can the alternating current waveform in the armature be converted into a dc waveform in DC generators? (13)	3	Apply	CO2
15.	Explain the construction and operating principle of split phase Induction motor. (13)	2	Understand	CO3
16.	Explain the working principles of various types of single-phase induction motor with neat diagram. (13)	2	Understand	CO3
17.	(a)A short shunt cumulative compound DC generator supplies 7.5KW at 230V. The shunt field, series field, and armature resistances are 100,0.3and 0.4Ω respectively. Calculate the induced e.m.f and the load resistance. (07) (b) A 30KW,300V, DC shunt generator has armature and field resistance of 0.05 and 100Ω respectively. Calculate the total power developed by the armature when it delivers full output power. (06)	1	Remember	CO2
	PART-C			
1.	(a)With neat diagram explain the construction and principle of a single-phase transformer. What are the characteristics of an ideal transformer? (08) (b) Express the emf equation of transformer. (07)	5	Evaluate	CO3
2.	A 200V DC shunt motor takes a load current of 100A and runs at 750rpm. The resistance of the armature winding and of shunt field winding is 0.1Ω and 40Ω respectively. Find the torque developed by the armature. (15)	6	Create	CO3
3.	Draw and explain the different characteristics of DC series and DC shunt Generator. (15)	5	Evaluate	CO2
4.	At starting the windings of a 230V,50Hz, split phase induction motor, main winding: R = 4Ω, X_L = 7.5Ω. Find 1. Current IM in the main winding. 2.Current IS in the starting winding. 3. Phase angle between I_M and I_S. 4. Line current. 5. Power factor of the motor. (15)	6	Create	CO2
5.	A DC motor connected to a 460V supply has an armature resistance of 0.15 ohms. Calculate (1) the value of back emf when the armature current is 120A. (2) the value of armature current when the back emf is 447V. (15)	6	Create	CO3
UNIT-III: SEMICONDUCTOR DEVICES AND APPLICATIONS				
Introduction - Characteristics of PN Junction Diode – Zener Effect – Zener Diode and its				

Characteristics – Half wave and Full wave Rectifiers – Voltage Regulation. Bipolar Junction Transistor – CB, CE, CC Configurations and Characteristics.				
PART – A				
Q.No	**Questions**	**BT Level**	**Competence**	**Course Outcome**
1.	Define current amplification factor for CE configuration in transistors.	1	Remember	CO3
2.	Write the current amplification factor for a CB transistor.	5	Evaluate	CO3
3.	Give the biasing condition for the transistor to operate as an amplifier.	1	Remember	CO3
4.	Define current amplification factor in CC transistor.	2	Understand	CO3
5.	What are the advantages of transistors?	2	Understand	CO3
6.	Write the current amplification factor for a CE transistor.	3	Apply	CO3
7.	What are the types of BJT?	1	Remember	CO3
8.	What is meant by Zener effect?	6	Create	CO3
9.	State what 'Early effect' in transistors is.	1	Remember	CO3
10.	Draw the circuit of full wave rectifier.	4	Analyze	CO3
11.	Give the symbol for NPN and PNP transistors.	5	Evaluate	CO3
12.	Define peak inverse voltage of a PN junction diode.	4	Analyze	CO3
13.	State the advantages of bridge rectifier.	6	Create	CO3
14.	Write the difference between the PN junction diode and Zener diode.	3	Apply	CO3
15.	What is avalanche breakdown?	3	Apply	CO3
16.	Give the application of Zener diode.	4	Analyze	CO4
17.	What are the different modes of transistor operation?	1	Remember	CO3
18.	Draw the input and output characteristics of CB Bipolar Junction transistor.	1	Remember	CO3
19.	Draw the characteristics of zener diode	2	Understand	CO3
20.	Find the value of IC, IB and β. Transistor values are α = 0.95, IE = 1mA.	2	Understand	CO3
21.	Define delay time.	1	Remember	CO3
22.	Define hybrid parameters.	2	Understand	CO3
23.	Define Knee voltage.	4	Analyze	CO3

24.	What do you mean by biasing?	1	Remember	CO3
	PART – B			
1.	Describe the working of PN junction diode in forward and reverse bias condition. (13)	1	Remember	CO3
2.	With the help of V-I characteristics describe the working principle of zener diode. What is its symbol? Mention also the special properties of zener diode when compared to ordinary diode. (13)	1	Remember	CO3
3.	What is the half-wave rectifier? Sketch its circuit. Discuss the operation of half-wave rectifier with the help of necessary waveforms. (13)	1	Remember	CO3
4.	Explain the working principle of Full Wave rectifier with neat diagram. (13)	2	Understand	CO3
5.	Explain the operation of PNP and NPN transistor. (13)	1	Remember	CO3
6.	Explain the working of Zener diode and its applications. (13)	3	Apply	CO3
7.	With neat sketch explain the input and output characteristics of a transistor in CB configuration. Draw also the necessary circuit. (13)	4	Analyze	CO3
8.	Explain various characteristics of BJT in common emitter configuration with neat diagram. (13)	3	Apply	CO3
9.	Compare the performance of a transistor in three different configurations. (13)	2	Understand	CO3
10.	Draw and explain working and characteristics of PN junction diode. (13)	4	Analyze	CO3
11.	Sketch the circuit of a simple transistor amplifier and explain the function of the components. (13)	2	Understand	CO3
12.	Let V_{BB} = 10V, R_B = 1MΩ, β = 100, V_{CC} = 15V, R_L = 10Ω in the transistor circuit. Find I_C, I_B, I_E and V_{CE}. Neglect V_{BE}. (13)	5	Evaluate	CO3
13.	Describe the operation and current components of PNP transistor in CB configuration. (13)	6	Create	CO3
14.	Obtain the expressions for DC output voltage for half wave and full wave rectifiers. (13)	4	Analyze	CO4
15.	Draw a simple transistor amplifier circuit and explain its operation. (13)	1	Remember	CO3
16.	With the help of sketches of circuits and waveforms, explain the working of half-wave rectifier and full-wave bridge rectifier. (13)	2	Understand	CO3
17.	Draw the circuit diagram and input-output characteristics of three configurations of a bipolar junction transistor. (13)	1	Remember	CO3
	PART - C			
1.	(i) Using the two-diode analogy explain why the base-emitter junction has to be forward biased to provide collector current. (ii) Sketch a common emitter amplifier circuit with an NPN transistor. (15)	6	Create	CO3
2.	With neat diagrams explain how a voltage regulator circuit	5	Evaluate	CO3

	regulates the output voltage under the following conditions: (1)Load resistance increases (2)Input voltage decreases (15)			
3.	Explain the avalanche effect that accounts for the reverse breakdown voltage (PIV of a diode). (15)	5	Evaluate	CO3
4.	What is the effect on capacitance of a PN junction diode as forward and reverse bias are applied? (15)	6	Create	CO3
5.	In a CE, IB changes from 100µA to 150µA which causes a change in Ic from 5mA to 7.5mA. If V_{CE} is held constant at 10V, find βac (hfe) (15)	5	Evaluate	CO3

UNIT IV DIGITAL ELECTRONICS

Binary Number System – Logic Gates - Boolean Algebra theorems – Digital circuits -Introduction to sequential Circuits – Flip-Flops – Registers and Counters – A/D and D/A Conversion

PART – A

Q.No	Questions	BT Level	Competence	Course Outcome
1.	Draw the truth table of an ex-or gate.	2	Understand	CO1
2.	Realize D flip-flop using NAND gates.	4	Analyze	CO1
3.	Name four different flip flops commonly available?	2	Understand	CO1
4.	What is a decade counter?	1	Remember	CO1
5.	Draw the symbol of AND gate and write its trurh table.	3	Apply	CO1
6.	What are the universal gates? Explain.	1	Remember	CO1
7.	Mention two types of D/A converter.	1	Remember	CO1
8.	Find the following binary difference 1011010-0101110.	1	Remember	CO1
9.	An active high SR latch as a ‘1’ on the S-input and ‘0’ on the R input. What state is the Latch in?	2	Understand	CO1
10.	Convert $(634)_8$ to binary.	5	Evaluate	CO1
11.	Convert (9B2 .1A) H to its decimal equivalent.	4	Analyze	CO1
12.	Define the term bit and byte.	6	Create	CO1
13.	List the different number systems.	3	Apply	CO2
14.	What are basic properties of Boolean algebra?	3	Apply	CO2
15.	State De Morgan's theorem.	4	Analyze	CO2
16.	Which gates are called as the universal gates?	1	Remember	CO3
17.	Define combinational logic	6	Create	CO5

18.	Define Half adder and full adder.	2	Understand	CO2
19.	What is a shift register?	1	Remember	CO3
20.	Classify shift register.	5	Evaluate	CO1
21.	Draw circuit for full adder.	1	Remember	CO3
22.	State the commutative property of Boolean algebra.	1	Remember	CO3
23.	Define the logic operation of AND gate with Boolean equation.	4	Analyze	CO1
24.	What is octal number system?	2	Understand	CO1
	PART – B			
1.	Explain the operation of R-S Flip-Flop and clocked RS flip flop. (13)	1	Remember	CO1
2.	Design a full adder, construct the truth table, simplify the output equations and draw the logic diagram. (13)	1	Remember	CO1
3.	Draw the logic symbol of OR, AND, NOT& NAND gate and explain its logic operation. (13)	1	Remember	CO1
4.	Draw a half adder using logic gates. Explain with truth table with expression of sum and carry. (13)	2	Understand	CO1
5.	Design a full Subtractor, construct the truth table, simplify the output equations and draw the logic diagram. (13)	2	Understand	CO3
6.	Explain the Half Subtractor, construct the truth table, simplify the output equations and draw the logic diagram. (13)	2	Understand	CO3
7.	Explain the working of T-flipflop & D-flipflop. (13)	1	Remember	CO5
8.	With neat diagram explain the working of JK – Flip flop. (13)	3	Apply	CO3
9.	Explain the operation and draw the following flip –flops, i. RS flip flop using NOR gate. (06) ii. D flip flop using NAND gate. (07)	4	Analyze	CO3
10.	Draw the logic diagram of clocked Master – slave JK Flip flop and explain its working. (13)	4	Analyze	CO5
11.	Draw a simple ring counter and briefly describe its counting action. (13)	6	Create	CO5
12.	Given the two binary numbers X = 1010100 and Y = 1000011, perform the subtraction (a) X -Y and (b) Y - X using 2's complements. (13)	3	Apply	CO2
13.	Classify the types of D/A and A/D converters. Also Explain the working principle of any one type in each converter. (13)	4	Analyze	CO1
14.	Explain the operation of synchronous counters. (13)	5	Evaluate	CO3
15.	Explain Successive-Approximation A/D conversion. (13)	4	Analyze	CO5
16.	Explain the operation of asynchronous counter. (13)	3	Apply	CO2

17.	Explain the working of binary weighted register type D/A convertor. (13)	1	Remember	CO5
	PART – C			
1.	Draw the logic diagram for a four-bit parallel input parallel output register. Indicate inputs, outputs and a negative edge triggered clock. (15)	5	Evaluate	CO2
2.	Write notes on the following (i) Counter (ii) Register (iii) Half Adder. (15)	5	Evaluate	CO1
3.	(a) Given the two binary numbers X = 1010100 and Y = 1000011, perform the subtraction (a) X -Y and (b) Y - X using 1's complements. (10) (b) Reduce A'B'C' + A'BC' + A'BC. (05)	6	Create	CO1
4.	(a) Explain Serial in Serial out Shift Register. (07) (b) Explain Serial in parallel out Shift Register. (08)	6	Create	CO5
5.	Explain R-S Flip Flop and Clocked R-S Flip Flop. (15)	5	Evaluate	CO1

UNIT V FUNDAMENTALS OF COMMUNICATION ENGINEERING

Introduction – Elements of Communication Systems– Modulation and Demodulation: Principles of Amplitude and Frequency Modulations. Digital Communication - Communication Systems: Radio, Antenna, TV, Fax, ISDN, Microwave, Satellite and Optical Fiber (Block Diagram Approach only).

PART – A

Q.No	Questions	BT Level	Competence	Course Outcome
1.	What is communication?	1	Remember	CO5
2.	What are the types of signals?	1	Remember	CO5
3.	Give few examples of Analog signals?	2	Understand	CO5
4.	What is meant by modulation?	5	Evaluate	CO5
5.	What is the process involved in analog to digital conversion?	5	Evaluate	CO5
6.	Based on the modulation index classify AM modulator.	2	Understand	CO5
7.	Define angle modulation.	2	Understand	CO5
8.	What is Radio communication?	6	Create	CO5
9.	Classify Radio receivers.	6	Create	CO5
10.	What is the basic function of communication satellite?	3	Apply	CO5
11.	What is facsimile?	1	Remember	CO5
12.	List few applications of microwaves communication.	4	Analyze	CO5
13.	Define the term Demodulation.	3	Apply	CO5

14.	Sketch the block diagram of basic communication system.	2	Understand	CO5
15.	State any two differences between analog and digital signals.	1	Remember	CO5
16.	State the function of satellite transponder.	1	Remember	CO5
17.	Why are digital signals said to be noise immune?	4	Analyze	CO5
18.	What are the advantages of optical fiber communication?	3	Apply	CO5
19.	State the basic characteristics of analog signal with an example.	4	Analyze	CO5
20.	Give typical values of uplink frequency and downlink frequency in satellite communications.	1	Remember	CO5
21.	Compare analog and digital signals.	4	Analyze	CO5
22.	Define digital signals.	1	Remember	CO5
23.	What is the use of satellite?	1	Remember	CO5
24.	Draw the block diagram of optical fibre communication	1	Remember	CO5
	PART – B			
1.	Explain briefly the principle of modulating a carrier signal by amplitude modulation and also obtain the expression for power. (13)	1	Remember	CO5
2.	With a neat block diagram, explain the principle of operation of microwave communication. (13)	2	Understand	CO5
3.	With the help of a block diagram describe the working of a monochrome (Black and White) TV transmitter. (13)	2	Understand	CO5
4.	Briefly explain the term modulation and demodulation. (13)	1	Remember	CO5
5.	Explain the configuration of satellite communication with neat diagram. Give its merits and demerits. (13)	2	Understand	CO5
6.	Explain briefly the need for modulation. What difficulties will be faced if un-modulated signals are transmitted? How modulation overcomes them? (13)	4	Analyze	CO5
7.	Sketch the circuit of a simple transistor AM modulator and explain its working. (13)	3	Apply	CO5
8.	With the help of block diagram describe the working of (i) a typical TV transmitter (06) (ii) a typical TV receiver (07)	4	Analyze	CO5
9.	Explain frequency modulation. Obtain the mathematical representation of frequency Modulated wave. (13)	6	Create	CO5
10.	What is mean by Amplitude modulation? Explain also the connected terms ‘Modulation Index’ ‘Wave equation’ and ‘Spectrum’. (13)	4	Analyze	CO5
11.	Draw a typical television video signal. Explain how this converted to an image on a TV screen. (13)	5	Evaluate	CO5

12.	With neat diagrams explain any one method of amplitude modulation and its corresponding demodulation. (13)	3	Apply	CO5
13.	Write short notes on the following modes of communication. (i) Microwave. (06) (ii) Optical fiber. (07)	1	Remember	CO5
14.	Show and discuss the block diagram of radio broadcasting and reception system and explain the function of each block. (13)	1	Remember	CO5
15.	Describe principle of operation of FAX system. (13)	2	Understand	CO5
16.	Draw the block diagram of optical fibre communication and explain the functions of each block. Give some applications of optical fiber communication. (13)	1	Remember	CO5
17.	Expand the term ISDN.With neat diagram explain its working. (13)	2	Understand	CO5
PART – C				
1.	A 10MHz sinusoidal carrier wave of amplitude 10mV is modulated by a 5KHz sinusoidal audio signal wave of amplitude 6mV. Find the frequency components of the resultant modulated wave and their amplitudes. (15)	6	Create	CO5
2.	Explain with the help of a block diagram the working of satellite communication and its short note on earth station receiver. (15)	6	Create	CO5
3.	Discuss any one method for suppressing the unwanted sideband. Support your answer with the required diagrams. (15)	5	Evaluate	CO5
4.	(i) Give some advantages of FM over AM. (07) (ii) Draw the block diagram arrangement of an AM transmitter and explain its operation. (08)	5	Evaluate	CO5
5.	With the help of block diagrams describe the working of Antenna. (15)	6	Create	CO5

COURSE OUTCOMES:

- Ability to identify and explain about electrical circuits and measuring instruments.
- Ability to identify and explain the construction and working of electrical machines.
- Ability to identify electronic components and explain its characteristics.
- Ability to acquire knowledge on digital electronics.
- Ability to acquire knowledge on fundamentals of communication systems.