Code: 23ES1202

I B.Tech - II Semester – Regular Examinations - JULY 2024

BASIC ELECTRICAL & ELECTRONICS ENGINEERING
(Common for EEE, ECE, CSE)

Duration: 3 hours   Max. Marks: 70

Note: 1. This question paper contains two Parts: Part-A and Part-B.
   2. Each Part contains:
   - 5 short answer questions. Each Question carries 1 Mark and
   - 3 essay questions with an internal choice from each unit. Each question carries 10 marks.
   3. All parts of Question paper must be answered in one place.

BL – Blooms Level   CO – Course Outcome

PART – A

		BL	CO
1.a)	Write the limitations of ohm's law.	L1	CO1
b)	What is a transformer?	L1	CO1
c)	State Faradays law of electromagnetic induction.	L1	CO2
d)	What is the voltage and current phasor relation for capacitor?	L1	CO2
e)	What is nuclear fusion?	L1	CO1

			BL	CO	Max. Marks
UNIT-I					
2	a)	Discuss the network elements (R, L and C) in detail with example.	L2	CO1	5 M
	b)	Determine the Peak factor and form factor for sinusoidal waveform.	L3	CO2	5 M
OR					

3	a)	Illustrate the behavior of series RL circuit excited by an Alternating voltage and draw its phasor diagram.	L3	CO3	5 M
	b)	Obtain the current 'i' using Superposition theorem for the following circuit.	L3	CO3	5 M
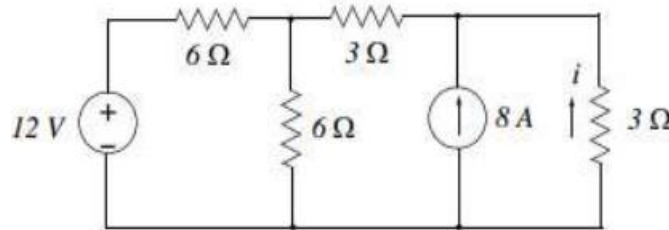
		UNIT-II			
4	a)	Elaborate the construction of DC Machine with neat sketch.	L3	CO2	5 M
	b)	Illustrate the construction and working principle of Permanent Magnet Moving Coil.	L3	CO2	5 M

<div align="center">OR</div>

5	a)	Explain the principle and operation of Three Phase Induction Motor.	L3	CO2	5 M
	b)	Explain the working principle and operation of an Alternator, Also write its applications.	L3	CO2	5 M

		UNIT-III			
6	a)	Enumerate the essential components of hydroelectric plant in detail with a layout.	L3	CO2	5 M
	b)	Differentiate among the Conventional and Non-Conventional energy resources.	L4	CO3	5 M

<div align="center">OR</div>

7	a)	Explain in detail the Power Tariff used for domestic energy consumption.	L3	CO3	5 M
	b)	Illustrate the working principle and operation of Fuse, also write its merits and demerits.	L3	CO2	5 M

PART – B

			BL	CO
1. f)		What is diffusion current?	L1	CO4
	g)	What is Zener breakdown?	L1	CO4
	h)	Define ripple factor.	L1	CO4
	i)	List out the characteristics of logic gate 'NOT'.	L1	CO4
	j)	What is a sequential logic circuit?	L1	CO4

			BL	CO	Max. Marks
UNIT-I
8	a)	Illustrate about the switching characteristics of PN junction diode with suitable diagrams.	L3	CO4	5 M
	b)	Explain the construction and the principle of operation of Bipolar Junction Transistor (BJT).	L3	CO4	5 M
OR
9	a)	Develop the input and output characteristics of a transistor in CE configuration.	L3	CO4	5 M
	b)	Illustrate the evolution of electronics from vacuum tubes to nano electronics.	L3	CO4	5 M

		UNIT-II			
10	a)	Analyse the Frequency Response characteristics of RC Coupled Amplifier.	L4	CO5	5 M
	b)	Analyze the characteristics of full wave bridge rectifier with and without using the capacitor filter.	L4	CO5	5 M
		OR			
11	a)	Describe the operation of Zener diode as a Voltage regulator.	L3	CO5	5 M
	b)	With neat block diagram, explain the working of a DC power supply. Also mention the principal components used in each block.	L3	CO4	5 M
		UNIT-III			
12	a)	Explain working of AND, NOR and EX-OR gates with truth tables.	L3	CO4	5 M
	b)	Convert the following numbers into decimal numbers. (i) $(110101)_2$ (ii) $(4576)_8$ (iii) $(268B)_{16}$	L3	CO4	5 M
		OR			
13	a)	Enumerate the master slave JK flip-flop with necessary diagrams and truth table.	L4	CO5	5 M
	b)	Design a full adder using two half adders and an OR gate.	L4	CO4	5 M