BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(AUTONOMOUS)
I - B. Tech II-Semester Regular/Supplementary Examinations (BR23), June - 2025
BASIC ELECTRICAL AND ELECTRONIS ENGINEERING
(CSE, CSE-AI&DS, AI&ML, INF)

Time: 3 hours   Max. Marks: 70

Question Paper consists of Part-A and Part-B
*Answer **ALL** the question in **Part-A** and **Part-B***

PART–A (1 X 5 = 5M)

		Marks	CO	BL
1. a)	Define super position theorem.	(1M)	CO 1	L1
b)	What is the importance of power factor.	(1M)	CO1	L1
c)	Write about the different parts of a DC Generator?	(1M)	CO2	L2
d)	What are non-conventional sources of energy?	(1M)	CO3	L1
e)	What is 1 unit electricity?	(1M)	CO3	L2

(10 X 3 = 30M)

2.a)	Explain in detail about electrical circuit elements and write the limitations of Ohm's Law?	(5M)	CO1	L2
2.b)	Define Impedance triangle? Define and derive the relationship between Active power, reactive power and apparent power.	(5M)	CO1	L1

(OR)

3.a)	In the series-parallel circuit shown in the following figure	5(M)	CO1	L3
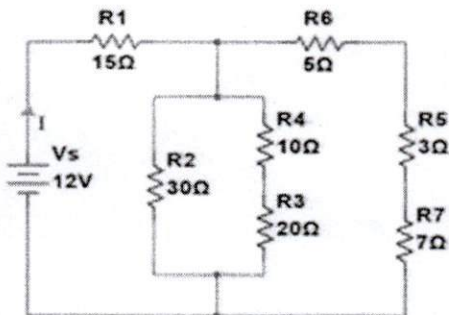
find:
(i) The total resistance of the circuit.
(ii) The total current flowing through the circuit.
(iii) The total power delivered by the voltage source

3.b)	Explain the terms Form Factor and Peak factor for a sinusoidal waveform.	5(M)	CO1	L2
4.a)	Explain constructional details of the single-phase transformer with a neat sketch.	5(M)	CO2	L2
4.b)	Explain the working of permanent magnet moving coil instrument with a neat sketch.	5(M)	CO2	L2

(OR)

5.a)	Explain principle and working of DC Generator?	5(M)	CO2	L2

5.b)	Explain the fundamental principle of the operation of a Wheatstone Bridge and how it determines an unknown resistance.	5(M)	CO2	L2

6.a)	Explain the operation of hydroelectric power station with neat schematic diagram.	10(M)	CO3	L2

(OR)

7.a)	Describe the operation of solar power station with a neat block diagram.	5(M)	CO3	L1
7.b)	Draw a neat figure of Miniature circuit breaker and explain the working of MCB.	5(M)	CO3	L1

PART–B (1 X 5 = 5M)

		Marks	CO	BL
8. a)	What is meant extrinsic semiconductor?	(1M)	CO4	L1
b)	Draw the input characteristics of CE configuration.	(1M)	CO4	L2
c)	Write any two applications of Zener diode	(1M)	CO5	L2
d)	Convert the following binary code number $(11011)_B$ to Hexadecimal number	(1M)	CO6	L5
e)	Draw basic logical gates with neat sketch	(1M)	CO6	L2

(10 X 3 = 30M)

9. a)	Draw the characteristics of a PN junction diode in both forward bias and reverse bias mode of operation.	5(M)	CO4	L1
9.b)	Explain the input and output characteristics of a transistor in CB configuration.	5(M)	CO4	L2

(OR)

10. a.)	Describe the action of PN junction diode under forward bias and reverse bias.	5(M)	CO4	L2
10. b)	Explain the input and output characteristics of a transistor in CC configuration	5(M)	CO4	L2

11. a)	What makes a Zener diode voltage regulator to maintain a constant output voltage?	5(M)	CO5	L1
11.b)	Draw and explain the block diagram of public address system	5(M)	CO5	L2

(OR)

12. a)	What is rectifier? Explain the working of full wave bridge rectifier with capacitor filter	5(M)	CO5	L1
12.b)	With a neat sketch, explain the block diagram of Regulated Power Supply.	5(M)	CO5	L2

13.a)	Draw the truth table and logic diagram of Universal gates and explain their operation	5(M)	CO6	L2
13.b)	Draw a half-adder circuit using both NAND and NOR gates	5(M)	CO6	L2

(OR)

14 a.)	Convert the following binary form 10111 into Gray Codes, and following Gray Code 1010111 into binary code.	5(M)	CO6	L5
14.b)	Write short notes on Half Adder and Full Adder	5(M)	CO6	L2

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