KUMARAGURU
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B.TECH. DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2018)

Second Semester

BIOTECHNOLOGY

U18EEI2208: Basic Electrical and Electronics Engineering

COURSE OUTCOMES

CO1: Solving basic DC and AC circuits.

CO2: Select suitable DC machine for given application.

CO3: Select suitable AC machine for given application.

CO4: Characterize logic gates, semiconductor devices according to their applications.

CO5: Identify electronic components and use them to design simple circuits.

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	State Kirchhoff's laws.	CO1	[K_2]
2.	Find the current through a 50Ω resistor connected to a 20V DC supply.	CO1	[K_2]
3.	Define Form Factor.	CO2	[K_2]
4.	Define RMS value.	CO2	[K_2]
5.	State the working principle of a DC Generator.	CO3	[K_2]
6.	State Fleming's Left-Hand Rule.	CO3	[K_2]
7.	Define a rectifier and write the types of rectifiers.	CO4	[K_2]
8.	Draw the symbol of Zener diode and mention it's terminals.	CO4	[K_2]
9.	State De morgan's Theorem.	CO5	[K_2]
10.	Prove that $(A + B') A = A$.	CO5	[K_3]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Two resistors of 10Ω and 5Ω are connected in parallel. If the total current in the circuit is 20Amps. Find the current through each resistor.	8	CO1 [K_3]

b) Determine the unknown voltage V and unknown resistor R in the circuit in Figure 1 using KVL.　8　CO1　[K₃]
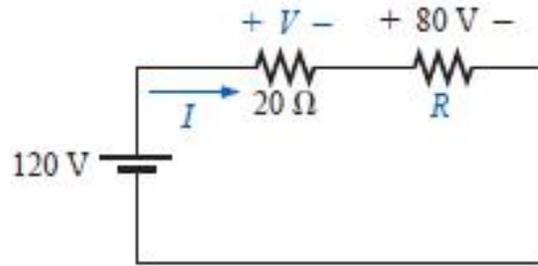

Figure 1

12. Determine the current through various resistors in the circuit given in Figure 2 using Mesh Analysis.　16　CO1　[K₃]
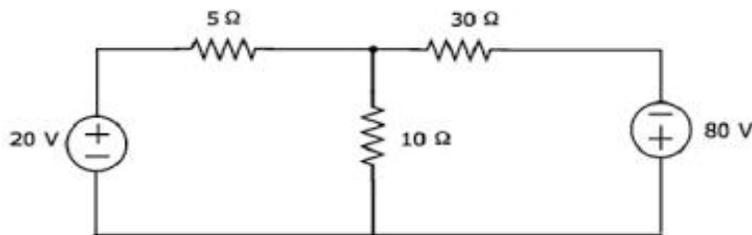

Figure 2

13. a) With a neat circuit diagram and relevant phasor diagram explain the series RLC Circuit.　10　CO2　[K₂]

   b) Derive an expression for the average value of a sinusoidal voltage.　6　CO2　[K₂]

14. a) With a neat diagram explain the construction and working of a Single-Phase Transformer.　12　CO3　[K₂]

   b) Mention the various types of DC Generators.　4　CO3　[K₂]

15. With neat circuit diagram and waveforms explain the working of full wave rectifier circuit.　16　CO4　[K₃]

16. a) Define full adder, write its truth table, derive the equations for sum and carry and draw the circuit.　10　CO5　[K₃]

   b) Determine the Decimal and Octal equivalent of binary number 11101.　6　CO5　[K₃]

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