School of Computing Science and Engineering

B.Tech CSE
ETE - Jun 2023

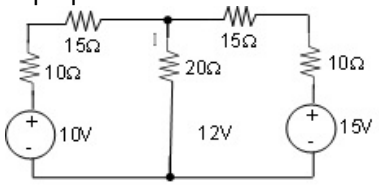
Time : 3 Hours **Marks : 100**

Sem II - G2UA120B / BEC101
Basic Electrical and Electronics Engg
Your answer should be specific to the question asked
Draw neat labeled diagrams wherever necessary

1. What is transducer? Describe the characteristics of transducer. K1 CO1 (5)

2. Explain the differences between Half wave and Full wave rectifier. K2 CO1 (5)

3. Calculate the potential difference across the 20-ohm resistor in the given circuit using the superposition theorem. K3 CO2 (5)



4. Comparing the parameter of magnetic and electric circuits. Explain parallel RLC AC circuit. K1 CO1 (10)

5. Illustrate the significance of the Emitter, base, and collector terminals of a BJT. Analyze the current components of a PNP transistor in common base (CB) configuration with a suitable diagram and established the relation of the current amplification factor for CB and common emitter (CE) configuration. K4 CO3 (10)

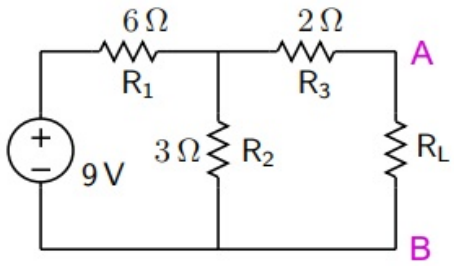
6 Compare the avalanche breakdown with the zener breakdown. Analyze the V-I characteristics of the Zener diode with a diagram. K4 CO3(10)

OR

The magnetic circuit has dimensions: Ac = 4 X 4 cm2, l g = 0.06 cm, l c = 40 cm, and N = 600 turns. Assume the value of μr = 6000 for iron. Calculate the exciting current and magnetic flux when flux intensity (Bc) is 1.2 T. K4 CO3 (10)

7. What is an actuator? Explain the differences between the sensor and transducer in detail. K2 CO1 (10)

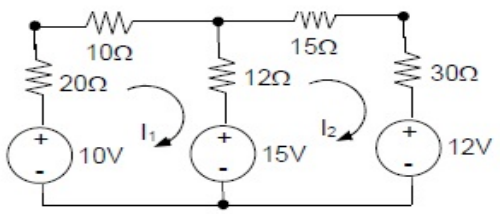
8. Define and explain Norton's theorem in detail. Evaluate the load current across terminals A and B using Thevenin's Theorem when RL=6Ω. K4 CO3 (15)



OR

Draw a half-wave rectifier circuit and evaluate Idc, Irms, ripple factor, and rectifier efficiency. Explain the input and output waveform of a half-wave rectifier in detail. K4 CO3 (15)

9. State and explain Kirchhoff's voltage law with an example. Calculate the current through the 12Ω resistor for the given circuit using loop analysis. K3 CO2 (15)



10. What is the Power factor? Draw a pure capacitive AC circuit and plot its phasor diagram after deriving the current and voltage equations. A 500 μH inductor, 80/π2 pF capacitor, and a 628 Ω resistor are connected to form a series RLC circuit. Calculate the impedance, resonant frequency, and power factor of this circuit. K3 CO2 (15)