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Question Paper Code	12767
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B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

First Semester

Computer Science and Business Systems

20ESEE105 - PRINCIPLES OF ELECTRICAL ENGINEERING

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

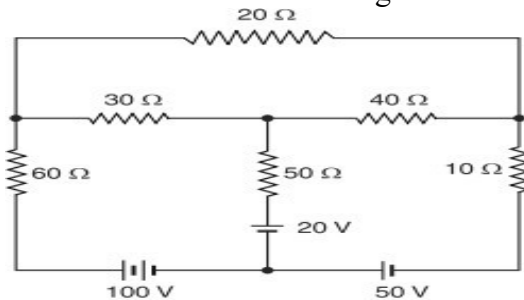
Answer ALL Questions

- | | Marks | K-
Level | CO |
|--|-------|-------------|-----|
| 1. What is the maximum safe current flow in a 47Ω, 2W resistor? | 2 | K1 | CO1 |
| 2. Compare between active and passive elements of electric circuit. | 2 | K2 | CO1 |
| 3. Mention the condition for maximum power transfer in DC and AC circuits. | 2 | K1 | CO2 |
| 4. Write the steps to convert delta to star network. | 2 | K1 | CO2 |
| 5. Define the term Frequency and Amplitude. | 2 | K1 | CO3 |
| 6. What is impedance triangle? | 2 | K1 | CO3 |
| 7. List the uses of dielectrics. | 2 | K1 | CO4 |
| 8. Define electromechanical energy conversion. | 2 | K1 | CO4 |
| 9. What are the types in electrical wiring systems? | 2 | K1 | CO5 |
| 10. What is meant by integrating type instrument? | 2 | K1 | CO5 |

PART - B (5 × 13 = 65 Marks)

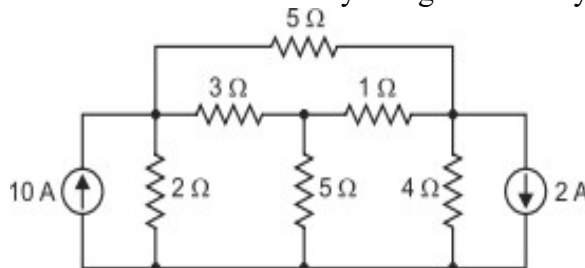
Answer ALL Questions

11. a) Calculate the current in all the branches using mesh analysis. 13 K2 CO1

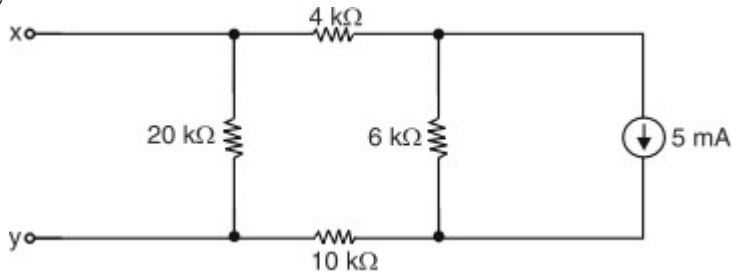


OR

- b) Find the currents in various branches by using nodal analysis. 13 K2 CO1

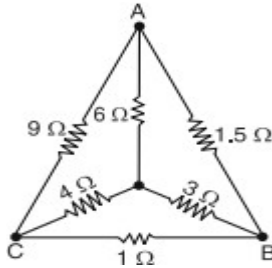


12. a) Find the Thevenin equivalent circuit lying to the right of the terminals x and y. 13 K2 CO2



OR

- b) Find the resistances between A and B, B and C & C and A by using delta / star transformation. 13 K2 CO2



13. a) A Coil having a resistance of 7Ω and an inductance of 31.8 mH is connected in 230 V , 50 Hz supply. Interpret (i) the circuit current (ii) Phase angle (iii) Power factor (iv) power consumed and (v) Voltage drop across resistor and inductor. 13 K2 CO3

OR

- b) Extend the operation of R-C series AC circuit with relevant phasor diagram and the formulas for phase angle, Impedance, Admittance, power and also draw the power curve. 13 K2 CO3
14. a) Derive the expression for charging of capacitor with relevant diagrams. 13 K2 CO4

OR

- b) Explain the voltage ratio, current ratio and emf equation of the transformer. 13 K2 CO4
15. a) Explain the construction and working of moving iron instrument. 13 K2 CO5

OR

- b) With a functional block diagram explain the measurement of temperature. 13 K2 CO5

PART - C (1 × 15 = 15 Marks)

16. a) i) Derive the capacitance of capacitors connected in series and parallel. 7 K3 CO4
 ii) Explain the Working of PMMC. 8 K2 CO5

OR

- b) i) Explain electric field and electric intensity. 7 K2 CO4
 ii) Discuss the various types of electrical safety system with its devices. 8 K2 CO5