Reg. No.												

Question Paper Code	12545

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

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)

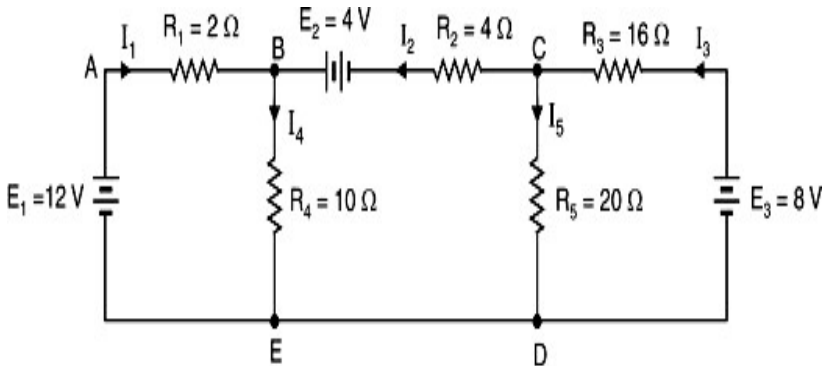
Answer ALL Questions

		Marks, K-Level, CO
1.	A 10 watt resistor has a value of 120 ohms. What is the rated current through the resistor?	*2,K2,CO1*
2.	Compare Series and Parallel resistive Circuit.	*2,K2,CO1*
3.	Write the steps to convert star to delta network.	*2,K1,CO2*
4.	What are the advantages of Thevenin'stheorem?	*2,K1,CO2*
5.	Define form factor and peak factor in AC circuit Analysis.	*2,K1,CO3*
6.	Illustrate the significance power factor.	*2,K1,CO3*
7.	A parallel plate capacitor has plates 1mm apart and a dielectric with relative permittivity of 3.39. Find electric intensity and voltage between the plates if the charge density is 3 x 10-4 C/m^2.	*2,K2,CO4*
8.	What is the principle of operation of a single phase transformer?	*2,K1,CO4*
9.	What is meant by indicating type instrument and give example?	*2,K1,CO5*
10.	List the various properties of good transducers.	*2,K1,CO5*

PART - B (5 × 13 = 65 Marks)

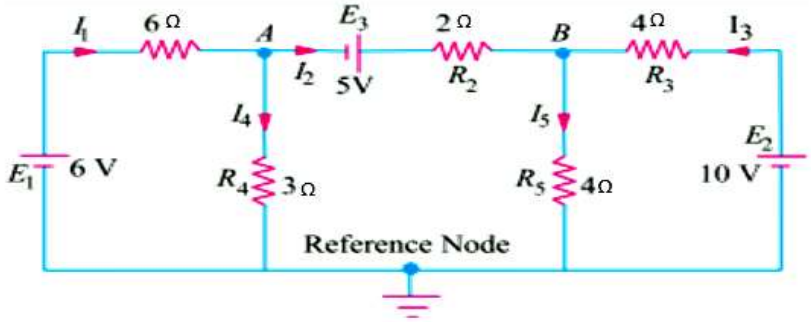
Answer ALL Questions

11. a) Find the currents using nodal analysis. *13,K2,CO1*

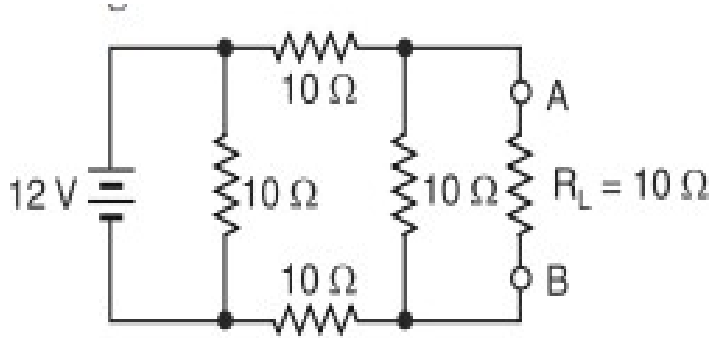


OR

b) Find the branch current in the network by using Mesh analysis. *13,K2,CO1*

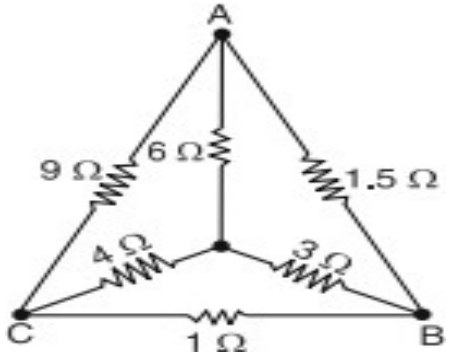


12. a) Find the Norton's equivalent circuit and solve for load voltage and load current. *13,K2,CO2*



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) Explain the operation of RLC series AC circuit with relevant phasor diagram and derive the formulas for phase angle, Impedance, Admittance and power. And also draw the power curve of the RLC Series AC circuit. *13,K2,CO3*

OR

b) A 230 V, 50 Hz ac supply is applied to a coil of 0.06 H inductance and 2.5ohm resistance connected in series with a 6.8 μF capacitor. Infer (i) impedance (ii) current (iii) phase angle between current and voltage (iv) power factor and (v) power consumed. *13,K2,CO3*

14. a) Show the similarities and dissimilarities between magnetic and electric circuits. *13,K2,CO4*

OR

b) Derive the expression for discharging of capacitor with relevant diagrams. *13,K2,CO4*

15. a) Explain the construction and working of PMMC. *13,K2,CO5*

OR

b) Explain the necessity of earthing and its two types. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) (i) Explain the core and shell type transformer. *8,K2,CO4*

(ii) Construct the different types of measuring instruments available and the torque development in them. *7,K2,CO5*

OR

b) (i) Derive an expression for capacitor with composite medium. *8,K2,CO4*

(ii) Explain the working and measurement of single phase wattmeter. *7,K2,CO5*