Reg. No.												

Question Paper Code	11755

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022 (MARCH 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)

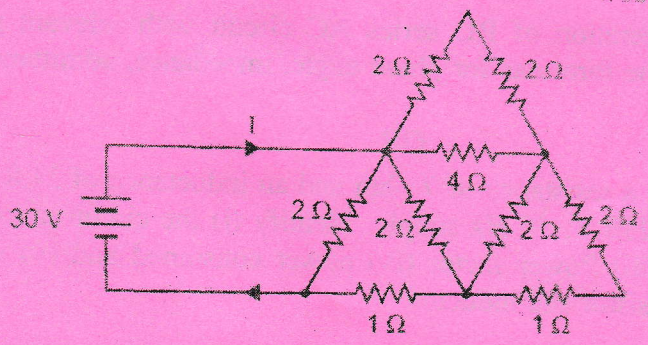
Answer ALL Questions

		Marks, K-Level, CO
1.	Compare between Series and Parallel resistive Circuit.	*2,K2,CO1*
2.	A 100 V lamp has a hot resistance of 250 Ω. Find the current taken by the lamp and its power rating in watts. Also the energy it will consume in 24 hours.	*2,K1,CO1*
3.	What is the procedure for verifying Thevenin equivalent circuit?	*2,K1,CO2*
4.	Show the steps to convert delta to star network.	*2,K2,CO2*
5.	Define true power and apparent power.	*2,K1,CO3*
6.	The maximum current in a sinusoidal a.c circuit is 10A. What is the instantaneous current at 45°?	*2,K1,CO3*
7.	List the uses of dielectrics.	*2,K1,CO4*
8.	Outline electromechanical energy conversion.	*2,K2,CO4*
9.	What is meant by integrating type instrument and give example?	*2,K1,CO5*
10.	What is the necessity of earthing?	*2,K1,CO5*

PART - B (5 × 13 = 65 Marks)

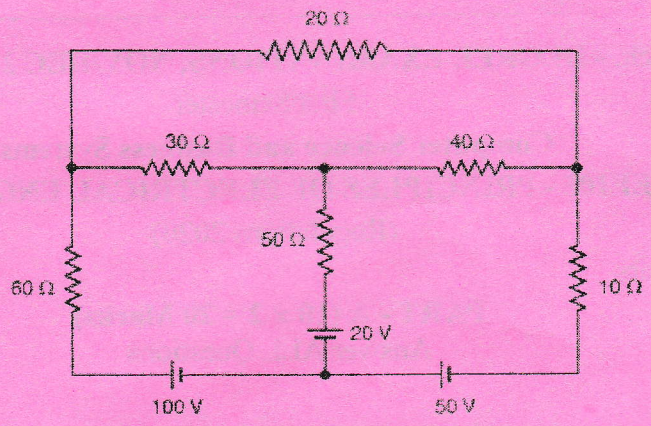
Answer ALL Questions

11. a) Calculate the current supplied by the DC source in the circuit shown below. *13,K2,CO1*

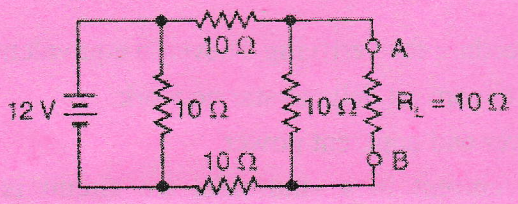


OR

b) By using the mesh current method, show the current supplied by each battery. *13,K2,CO1*

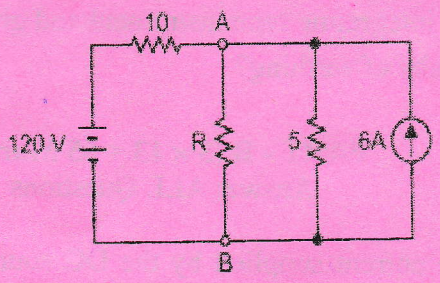


12. a) Using Norton's equivalent circuit, solve for load voltage and load current. *13,K3,CO2*



OR

b) Calculate the value of resistance by using maximum power transfer theorem. *13,K2,CO2*



13. a) Extend the operation of RC series AC circuit with relevant phasor diagram and the formulas for phase angle, impedance, admittance and power. *13,K2,CO3*

OR

b) A Coil having a resistance of 7 ohm and an inductance of 31.8 mH is connected in 230 V, 50 Hz supply. Identify (i) the circuit current (ii) Phase angle (iii) Power factor (iv) power consumed and (v) voltage drop across resistor and inductor. *13,K3,CO3*

14. a) (i) Demonstrate the capacitance of capacitors connected in series and parallel circuits. *8,K2,CO4*

(ii) Summarize the discharging of capacitor with neat waveform. *5,K2,CO4*

OR

b) Explain the transformer ratio and emf equation of the transformer. *13,K2,CO4*

15. a) Explain the principle, working and measurement of single phase wattmeter. *13,K2,CO5*

OR

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

PART - C (1 × 15 = 15 Marks)

16. a) A voltage v(t) =100 sin 314t is applied to a series circuit consisting of 10 ohm resistance, 0.0318 H inductance and a capacitor of 63.6 μF. Find (i) expression for i(t) (ii)phase angle between voltage and current (iii) power factor (iv)active power consumed (v) peak value of the pulsating power. *15,K3,CO3*

OR

b) Outline Superposition Theorem and infer the current in the load and current supplied by the battery. *15,K2,CO2*