

Reg. No. :

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 42307

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Second Semester

Electrical and Electronics Engineering

14UEE207- ELECTRIC CIRCUITS

(Regulation 2014)

Duration: Three hours

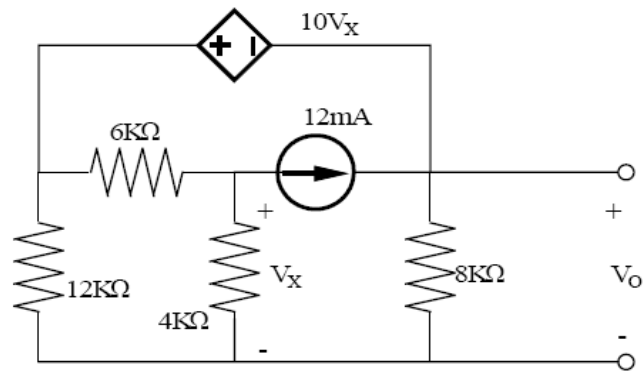
Maximum: 100 Marks

Answer ALL Questions.

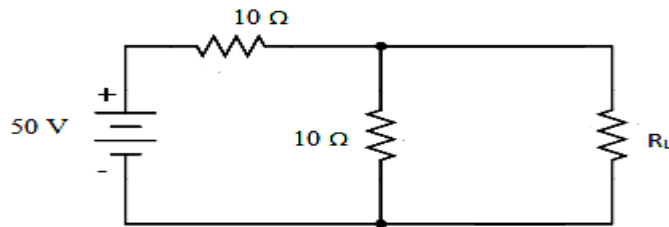
PART A - (10 x 1 = 10 Marks)

1. Six light bulbs are connected in parallel across 110 V. Each bulb is rated at 75 W. How much current flows through each bulb?
(a) 0.321 A (b) 0.682 A (c) 7.5 A (d) 110 A
2. A 100 Ω resistor is connected across the terminals of a 9 V battery. What is the power dissipation in the resistor?
(a) 9 W (b) 0.09 W (c) 0.19 W (d) 0.81 W
3. Three equal resistances of 9 Ω are connected in delta. What is the resistance in one of the arms in an equivalent star circuit?
(a) 3 Ω (b) 9 Ω (c) 1 Ω (d) 27 Ω
4. Maximum power is transferred to load, when the load resistance is
(a) equal to half of the source resistance (b) equal to source resistance
(c) equal to zero (d) equal to twice the source resistance
5. In a series RLC circuit, if C is increased, the resonant frequency
(a) Increases (b) Decreases (c) Remains the same (d) Becomes zero
6. Impedance of an ideal parallel resonant circuit without resistance in either branch is
(a) Zero (b) Capacitive (c) Inductive (d) Infinite

- (b) Calculate V_o from the following circuit shown below using mesh analysis. (16)

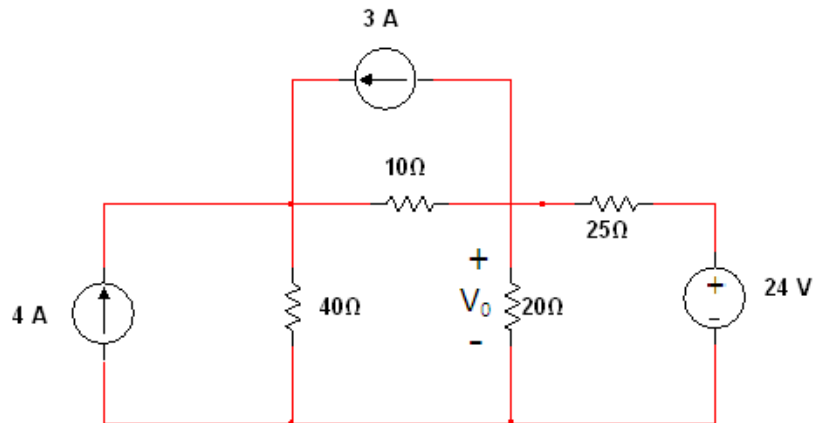


17. (a) Predict the value of load resistance so that maximum power is transferred from battery. (16)



Or

- (b) Calculate the voltage V_o for the given circuit below. (16)



18. (a) State the condition for resonance in series RLC circuit and obtain the expression for resonant frequency. Derive the expression for bandwidth for a series RLC circuit as a function of resonant frequency. (16)

Or

- (b) For a two-branch parallel circuit $R_L = 15 \Omega$, $R_C = 30 \Omega$, $X_C = 30 \Omega$, $E = 120 V$ and $f = 60 Hz$. For the condition of resonance, calculate (1) the two values of L and (2) the two values of total current. (16)

19. (a) Explain the characterization of two port networks in terms of Z , Y and h parameters. (16)

Or

- (b) Find the Y parameters for the RC ladder network shown in Fig.8. (16)

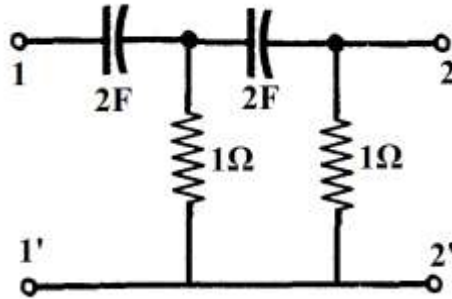


Fig.8

20. (a) An unbalanced four wire star connected load has balanced supply voltage of 400 V. Load impedances are $4+j8 \Omega$, $3+j4 \Omega$ and $15+j10 \Omega$ for R phase, Y phase and B phase respectively. Estimate the line currents, neutral currents and total power. (16)

Or

- (b) Explain in detail the phasor diagrams of the voltages and currents of a three phase unbalanced circuit. (16)