Name of the Student _____ Roll No._____

MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRICAL ENGINEERING

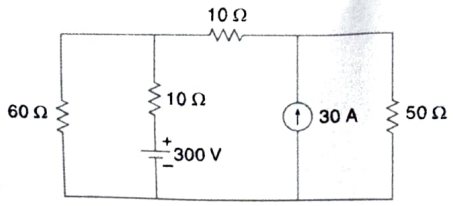
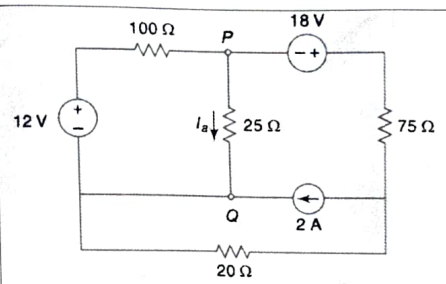
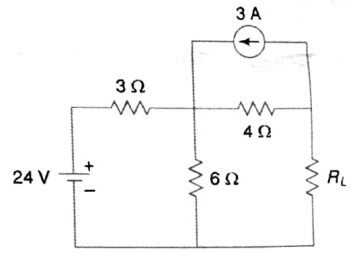
Mid Term Exam (May 2023)

Course: **B. Tech** Semester II Branch: **G-section**

Subject Name : BEEE Subject Code: EE 124

Time : **1 Hours 30 Minutes** Max Marks: **20**

NOTE: All questions are compulsory. Assume the necessary data suitably if any missing.

Q. No.	Question	Marks
1	a. Determine power dissipated in 60 ohms resistor. 	2
	b. In the circuit shown in Fig. find current I_a using super position theorem. 	3
2	Determine current through R_L For different values of R_L (i) 10 Ω (ii) 20 Ω and (iii) 30 Ω. 	4
3	a) A resistance of 10 ohms is connected in series with an inductance of 0.05 H and a capacitance of 300 mF to a 100 V ac supply. Calculate the value and phase angle of the current when the frequency is (a) 25 Hz (b) 50 Hz.	3
	b) *Three loads are placed across 230V, 50Hz supply. The loads are 10 ∠ − 30° W; 20 ∠ 60° W and 40 ∠ 0° W. Determine (i) the admittance (ii) equivalent impedance (iii) power consumed and (iv) power factor.*	3
4	Draw the equivalent circuit diagram of the transformer referred to H.V. side. Draw the phasor diagram and determine voltage regulation expression using equivalent circuit diagram for lagging p.f. load.	5

MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY, BHOPAL

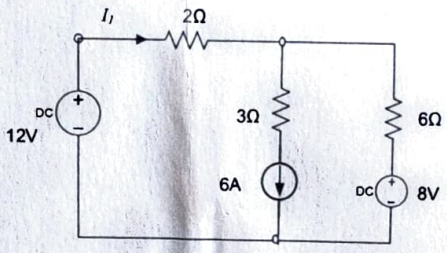
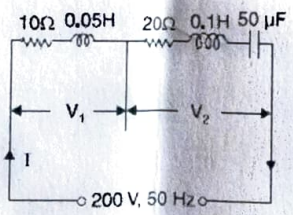
END TERM EXAMINATION, June 2023

B.Tech. II Semester

Subject: Basic Electrical & Electronics Engg. **Subject code : EE-108**

Time : 3 Hours **Max. Marks : 50**

Note: *(i) Assume the necessary data suitably, if any missing.*
(ii) All questions carry equal marks.

Q.No.	Questions	Marks
Q.1.	(a) Derive the condition of maximum power transfer in any D.C. circuit and find the efficiency when the source is transferring maximum power to the load.	5
	(b) Determine the current I_1 in the circuit of given figure using Superposition theorem. 	5
Q.2.	(a) In the given circuit , find the values of : (i) the current I (ii) V1 and V2 and (iii) Power factor. Draw the phasor diagram. 	5
	(b) Describe the phenomenon of resonance in parallel circuit and explain its Q factor. Why parallel resonance circuit is often regarded as rejector circuit?	5
Q.3.	(a) In a 50 kVA, 1100/220 V transformer, the iron and copper losses at full load are 350 W and 425 W, respectively. Calculate the efficiency at i. half load with unity power factor ii. full load with 0.8 power factor lagging and iii. Maximum Efficiency and the load at which maximum efficiency occurs assuming the load to be resistive.	5
	(b) Draw the equivalent circuit diagram of the transformer referred to secondary side. Draw the phasor diagram for this circuit and determine voltage regulation expression for lagging p.f. load.	5

P.T.O.

Q.4.	(a) What are the main **parts of D C Machine** ? Write the function of each part and state the **material** of which each **part is made?**	5
	(b) Develop an expression for the speed of a d c motor in terms of back emf and flux per pole.	5
Q.5.	a) Draw and explain V-I characteristic of P-N Junction diode when it is (i) forward biased (ii) reverse biased.	5
	b) Drive the expression of output voltage and efficiency of full wave rectifier.	5