Name of the Student _____ Roll No._____

MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY

End Term Exam , March '2022

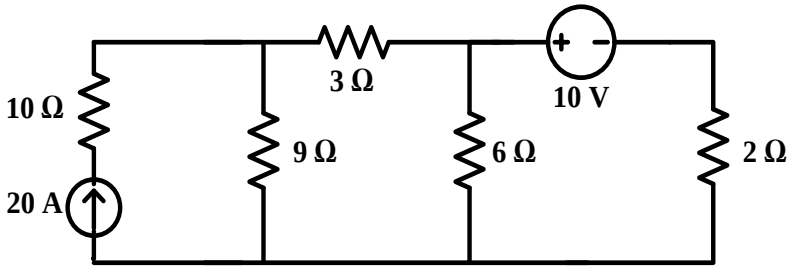
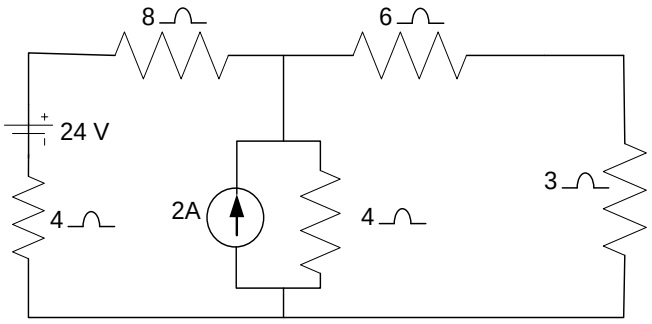
Course: **B. Tech** Semester - **I** Branch: **SECTION- F,G,H,I,J**

Subject Name : Basic Electrical and Electronics Engineering Subject Code: EE-108

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

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

Name of the submitted answer sheet (PDF file) must be your Roll number.

Q. No.	Question	Marks
1	a) Calculate the current in 3 ohm resistor using super position theorem.  b) With the help of Thevenin's theorem, calculate current flowing through the 3Ω resistor in the network of given figure  	5 5
2	a) Two circuit, the impedance of which are given by Z1 = 10+j15 and Z2 = 6-j8 ohms are connected in parallel. If the total current supplied is 15 A, what is the power taken by each branch? Find also the power factor of individual circuits and of combination. Draw vector diagram.	5
	b) Three impedances are connected in series across a 200V, 50 Hz supply. The first impedance is a 10 Ω resistor, the second is a coil of 15 Ω inductive reactance and 5Ω resistance and the third consists of a 15 Ω resistor in series with 25Ω capacitive reactance. Calculate (i) circuit current (ii) circuit phase angle (iii) circuit power factor (iv) power consumed.	5
3	a) Draw and discuss the input and output characteristics of a Bipolar Junction transistor in CE configuration. (Indicate there in the active, cut-off and saturation region). b) Describe the forward and reverse biasing of PN junction diode and also draw the VI characteristic of PN junction diode.	5 5
4	a) With the help of neat sketches explain the Core type and Shell type transformer. Discuss their advantages and disadvantages. Give the reasons for the sandwich-type of arrangement of windings.	5

	b) A 60 kVA, Single phase transformer has copper losses and core at full 34.78 kW and 17.39 kW respectively. Determine its efficiency at 60% of full load at 0.8 p.f. lag. Also determine maximum efficiency of the transformer.	5
5	a) A 6-pole dc generator has 65 slots and each slot contains 15 conductors. Flux per pole is 8 mwb and runs at 1000rpm. Find the induced emf of machine if its armature is wave wound. b) State the types of DC motors? What is the basis of the classification, represent with the help of circuit diagram?	5 5