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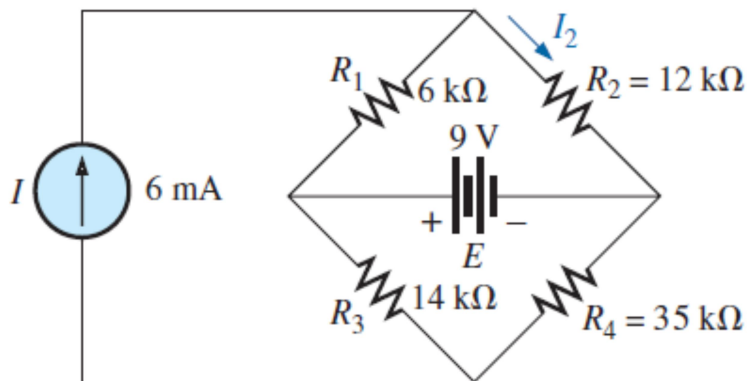
Mid-Term Examinations – November 2021

Programme	: B.Tech	Semester	: Fall 2021-22
Course	: Electric Circuits and Systems	Code	: EEE1001
Faculty	: Mohammad Sarwar Raean	Slot/ Class No.	: D11+D12+D13/0162
Time	: 1 ½ hours	Max. Marks	: 50

Answer all the Questions

Q.No.	Sub. Sec.	Question Description	Marks
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- 1 (a) Using the principle of superposition, find the current I_2 through the $12\text{ k}\Omega$ resistor in following Fig.1.



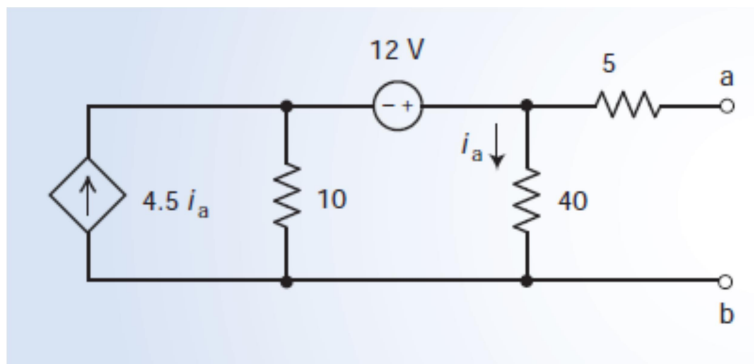
5

Fig. 1

- (b) An inductance $L = 0.0637\text{ H}$ and a parallel $R = 40\text{ }\Omega$ connected across 200 V , 50 Hz ac supply. Calculate: (a) the current drawn from the supply (b) draw the phasor diagram.

5

- 2 Determine the Thevenin's equivalent circuit for the circuit shown in Fig. 2.



10

Fig. 2.

- 3 (a) A half-wave diode rectifier has a forward voltage drop, i.e., voltage drop across the diode when conducting is 0.7 V. The load resistance is $600\ \Omega$. The rms value of the ac input is 28.87 V. Calculate I_{dc} , I_{rms} , and PIV. 5
- (b) For the circuit shown in Fig.3 find : (i) the voltage across $10\text{k}\ \Omega$ resistance (ii) the voltage drop across series resistance (iii) the current through zener diode. 5

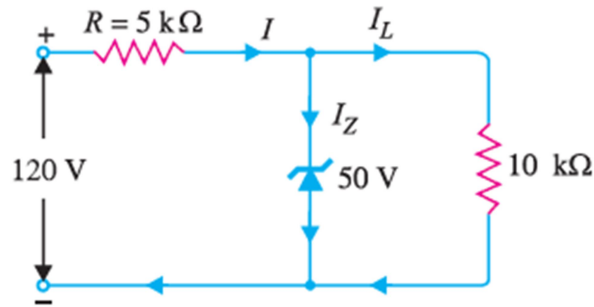


Fig.3

- 4 Draw and discuss the input and output characteristics common emitter configuration of NPN transistor also show the region of operation. 10
- 5 (a) A bulb in a staircase has two switches, one switch being at the ground floor and the other one at the first floor. The bulb can be turned ON and also can be turned OFF by and one of the switches irrespective of the state of the other switch. The logic of switching of the bulb resembles of which gate? Explain your answer with truth table of the gate. 5
- (b) Draw the circuit diagram using logic gates to add-up two data bits and explain the results with the applied data bits pattern. 5

