Amrita Vishwa Vidyapeetham
Amrita School of Engineering , Amaravati
B. Tech Mid-term Examinations Oct 2024
1st Semester
Computer and Communication Engineering
23CCE102 Fundamentals of Electrical Engineering

Duration: Two hours   Maximum: 50 Marks

Course Outcomes (COs):

| CO	Course Outcomes
CO01	understand fundamental electrical quantities
CO02	understand the principles of electrical measurements
CO03	analyse ac and dc circuits
CO04	understand the operation of electromagnetic machines

Answer all the questions

1. An apartment building has following average electrical consumptions per day:
   a. 4 CFL bulbs of 30W working for 5 hours
    b. 3 filament lamps of 50W working 8 hours
    c. One air conditioner of 1.5kW working 9 hours
    d. one electric heater of 0.75kW working 1 hour
    e. One television of 60W working for 6 hours
    f. Washing machine of 0.7kW working for 1 hour
    g. Pumping motor of 3kW working for 90 min
    h. Refrigerator of 1kW working for 15 hours
       − Estimate the cost of energy per month if one unit costs Rs. 6.25 that has to be paid for
          electricity board.   **[10M] [CO01] [BTL3]**

2. a. If R_{eq} = 50 ohm in the below circuit of find R.
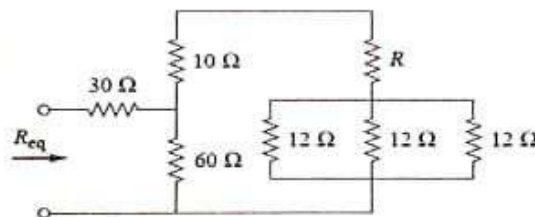
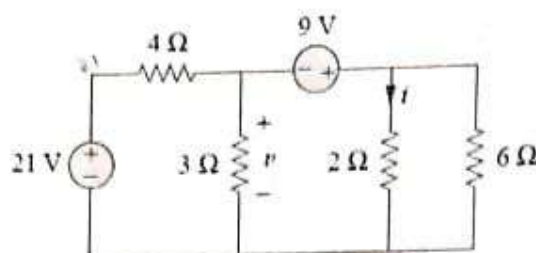   b. Consider the circuit given below. Find the equivalent resistance at terminals: (a) a-b, (b) c-d.
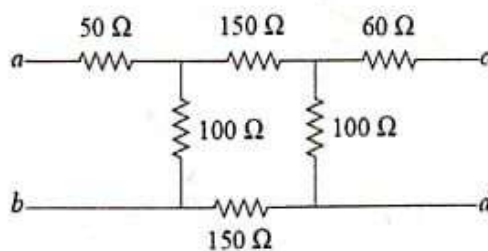
                                                                     [5+5=10M] [CO01] [BTL3]
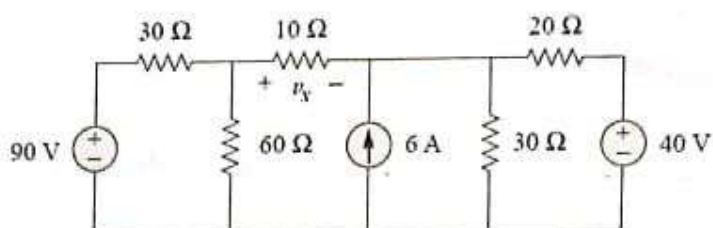
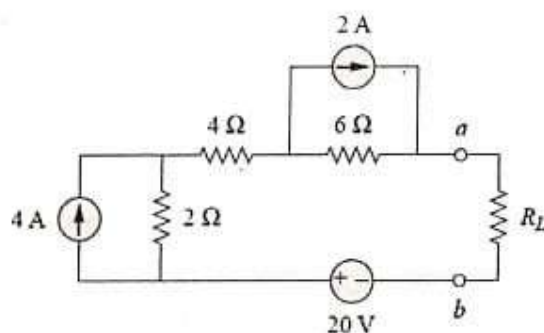3. Find v and i in the circuit given below.

[10M] [CO02] [BTL3]

4. Use superposition theorem to obtain v_x in the below circuit.

[10M] [CO02] [BTL4]

5. (a) For the circuit given below obtain the Thevenin equivalent at terminal a-b.
   (b) Calculate the current in R_L=8 Ohm
   (c) Find R_L for maximum power deliverable to R_L
   (d) Determine that maximum power.

[10M] [CO03] [BTL2]

CO	Marks	BTL	Marks
CO01	20	BTL 1	0
CO02	20	BTL 2	10
CO03	10	BTL 3	30
		BTL 4	10

Course Outcome /Bloom's Taxonomy Level (BTL) Mark Distribution Table