SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR

Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

**Subject with Code :** Basic Electrical and Electronics Engineering (18 EE0241)
Course & Branch : B. Tech. – MEC
**Year & Semester** : II - B. Tech. & II - Semester   **Regulation**   : R18

UNIT - I - INTRODUCTION TO ELECTRICAL ENGINEERING

1.	**a)**	State and explain Ohm's law.	**5 M**
	b)	Explain in detail about passive elements.	**5 M**
2.		Three resistances of values 20, 30 and 50 are connected in series across 20 V DC supply. Calculate, i) Equivalent resistance of the circuit. ii) Total current from the supply. iii) Voltage drop across each resistor. iv) Power dissipated in each resistor.	**10 M**
3.		Discuss about various energy sources in detail.	**10 M**
4.	**a)**	State and prove Krichhoff's laws with suitable examples.	**5 M**
	b)	Find i_1, i_2, i_3 for the given circuit by using Kirchhoff's laws?	**5 M**
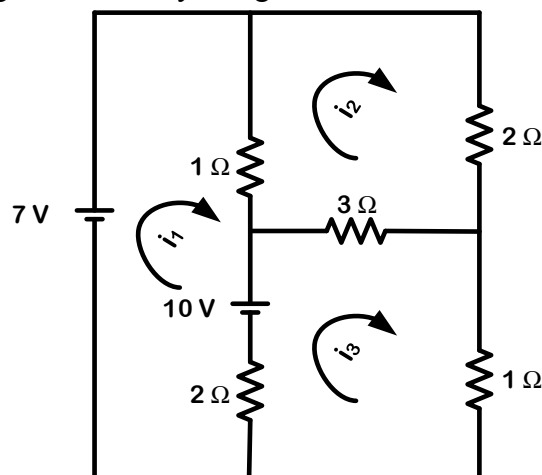
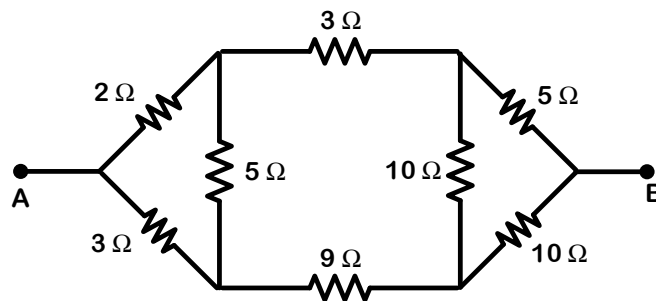|		
5.	Find the current through 12Ω resistor for the given circuit using Kirchoff's laws.	**10 M**
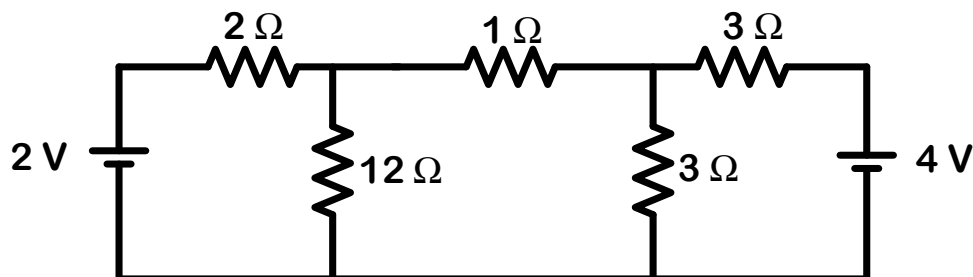
6. Find the current delivered by the source for the circuit shown in figure. **10 M**
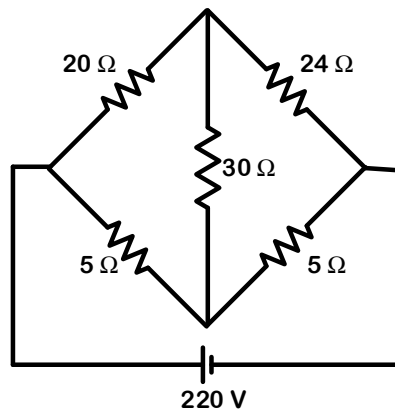
7. Find the voltage to be applied across AB in order to drive a current of 5A into the circuit. **10 M**

8. Explain in detail about basic circuit components. **10 M**

9. Explain the following in detail
i) Resistive networks
ii) Inductive networks
iii) Capacitive networks

10. **a)** Define RMS value, **2 M**
b) Define average value, **2 M**
c) Define form factor. **2 M**
d) Define peak factor. **2 M**
e) Prove that the form factor of the sinusoidal wave is 1.11. **2 M**

QUESTION BANK (DESCRIPTIVE)

Subject with Code : Basic Electrical and Electronics Engineering (19 EE0240)
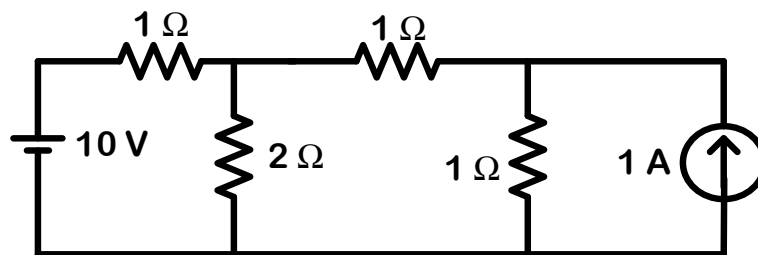**Course & Branch :** B. Tech. – CSE
Year & Semester : I - B. Tech. & II - Semester   **Regulation   :** R19
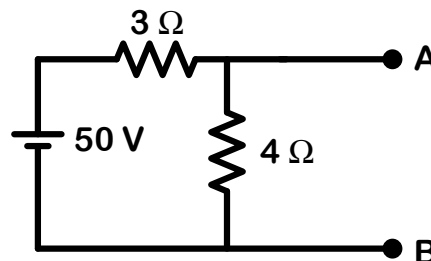
UNIT - II – NETWORK THEOREMS
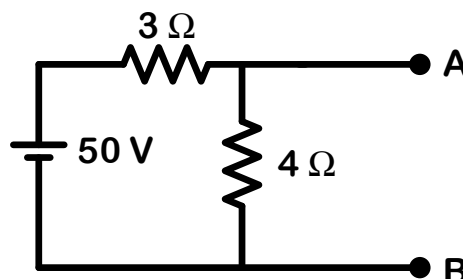## TWO PORT NETWORKS

1. **a)** State Super position theorem   **2 M**

   b) Calculate the current in 20Ω resistor in the given circuit using super position   **8 M**
   theorem.

2. **a)** State Thevenin's theorem   **2 M**

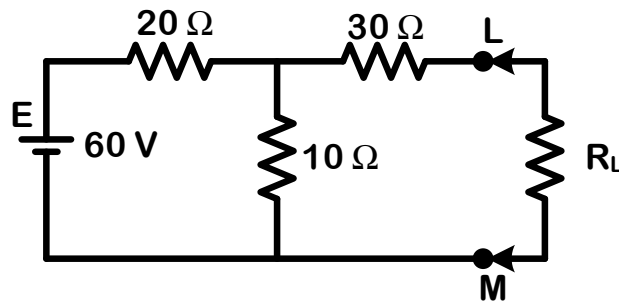   **b)** Find the Thevenin's equivalent circuit across AB for the circuit shown.   **8 M**

**3.** **a)** State Norton's theorem.   **2 M**

   **b)** Find Norton's equivalent circuit across AB for the circuit shown.   **8 M**

4. Determine the maximum power delivered to the load resistance R_L **10 M**

5 State and prove Reciprocity theorem with suitable example. **10 M**

5. **a)** Explain in detail about Impedance parameters **5 M**

  b) Briefly discuss about Admittance parameters **5 M**

7. Find the Open circuit parameters for the given circuit **10 M**
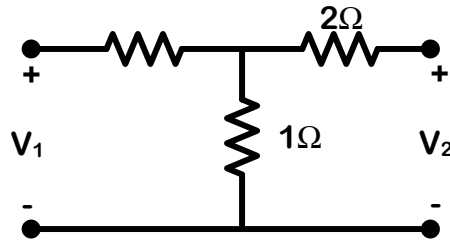
8. Find the Short circuit parameters for the given circuit. **10 M**
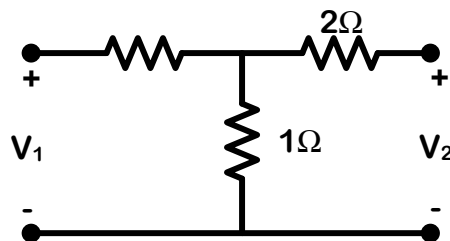
9. **a)** The given ABCD parameters are A=2, B=0.9, C=1.2, D=0.5. Find Y- parameters. **5 M**

  b) The given Y-parameters are Y_{11}=0.5, Y_{12}=Y_{21}=0.6, Y_{22}=0.9. Find the Impedance parameters. **5 M**

10. **a)** Define Thevenin's and Norton's theorem **2 M**

  b) State Maximum power theorem **2 M**

  c) State Reciprocity theorem **2 M**

  d) Define Super position theorem **2 M**

  e) Mention the importance of two port networks **2 M**

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QUESTION BANK (DESCRIPTIVE)

Subject with Code : Basic Electrical and Electronics Engineering (19 EE0240)
Course & Branch : B. Tech. – CSE
Year & Semester : I - B. Tech. & II - Semester   **Regulation   :** R19

UNIT - III – DC MOTORS & TRANSFORMERS

1.	**a)**	Discuss about the principle of operation of DC motors	**5 M**
	b)	Calculate the value of torque established by the armature of a 4-pole DC motor having 774 conductors, 2 paths in parallel, 24mwb flux per pole when the total armature current is 50A.	**5 M**
2.		A 220V shunt motor takes a total current of 80A and runs at 800 r.p.m. Shunt field resistance and armature resistance are 50Ω and 0.1Ω, respectively. If iron and friction losses amount to 1600W. Find (i) Copper losses (ii) Armature torque (iii) Shaft torque (iv) Efficiency.	**10 M**
3.	**a)**	Derive Torque equation of dc motor.	**5 M**
	b)	The counter emf of Shunt motor is 227 V. The field resistance is 160Ω and field current 1.5A. If the line current is 36.5A, find the armature resistance also find armature current when the motor is stationary.	**5 M**
4.	**a)**	Explain about constructional details of dc motor.	**6 M**
	b)	A 6 pole lap wound shunt motor has 500 conductors, the armature and shunt field resistances are 0.05 Ω and 25 Ω, respectively. Find the speed of the motor if it takes 120 A from dc supply of 100 V. Flux per pole is 20 mWb.	**4 M**
5		Briefly discuss about various types of DC motors with neat sketches.	**10 M**
5.	**a)**	Derive EMF equation of a transformer	**6 M**
	b)	A 100 kVA, 11000/400 V, 50 Hz transformer has 40 secondary turns. Calculate the number of primary turns and primary and secondary currents.	**4 M**
7.	**a)**	Explain constructional details of transformer.	**6 M**
	b)	A 20 kVA, 2000/200 V, 50 Hz transformer has 66 secondary turns. Calculate the number of primary turns and primary and secondary currents. Neglect losses.	**4 M**
8.		Explain in detail about various transformer losses.	**10 M**
9.	**a)**	Derive the condition for maximum efficiency of the transformer.	**5 M**
	b)	Discuss about the voltage regulation of the transformer.	**5 M**
10.	**a)**	Enumerate the types of DC motors.	**2 M**
	b)	List the application of DC motors.	**2 M**
	c)	Write the expression for transformer ration in terms voltage, current and turns	**2 M**
	d)	What is working principle of transformer?	**2 M**
	e)	Enumerate the various losses associated with transformer.	**2 M**

Prepared by: **B.RAMESH**