

Question Bank (G scheme)

Name of subject: Electrical Technology

Subject code : 17331

Semester : III

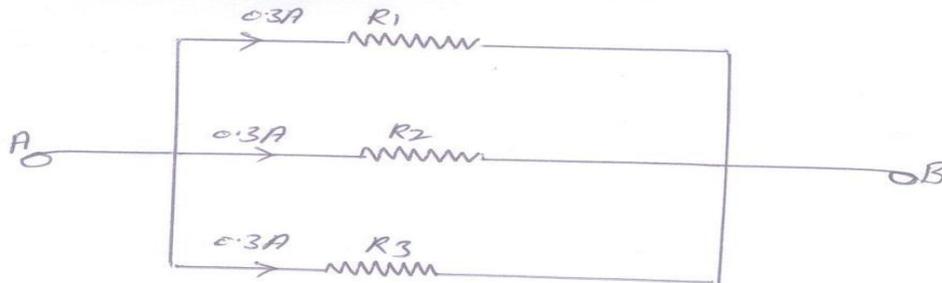
Unit Test: I

Course : CM/IF3G

CHAPTER 1 DC CIRCUITS (12 marks)

3 marks

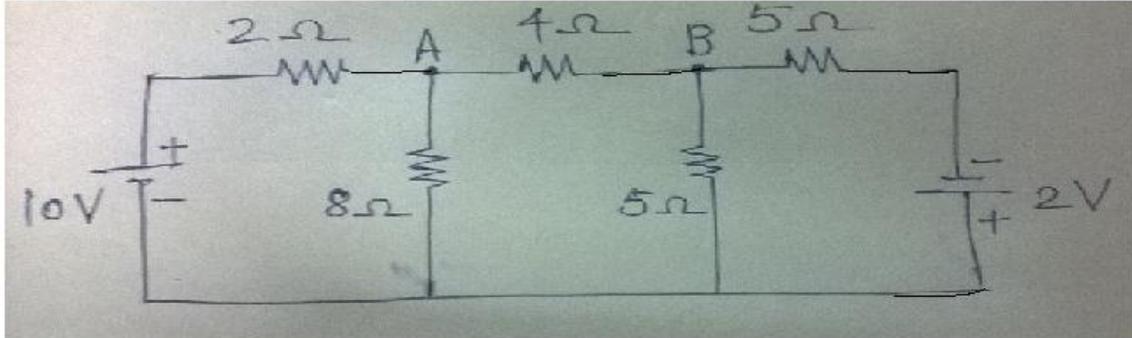
- 1) State Ohm's Law with its expression.
- 2) Define: Resistance, EMF and Potential Difference.
- 3) Find the value of resistors in figure, if the equivalent resistance of the three resistors joined in the parallel is 12 ohm.



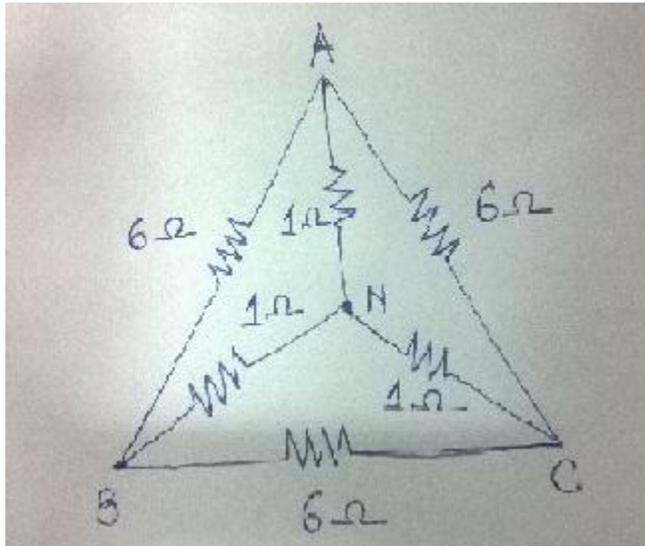
- 4) Give mathematical expressions used to convert
 - (a) Star network into delta network
 - (b) Delta network into Star network

4marks

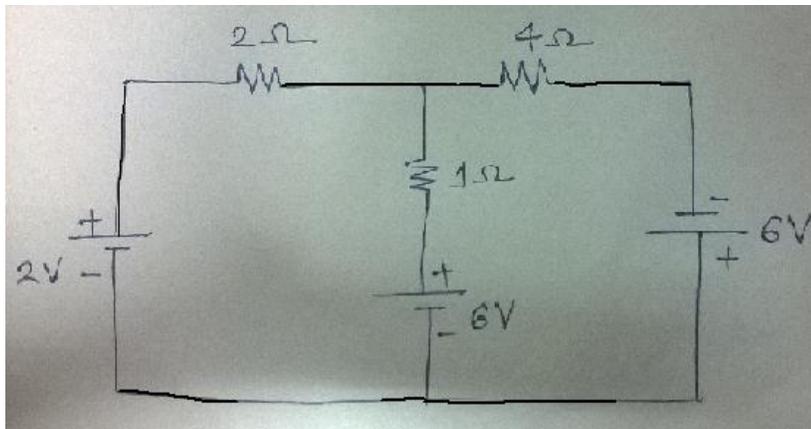
- 5) State KCL & KVL. Explain each with diagram.
- 6) With the help of a neat circuit diagram, explain how nodal analysis method is used to find node voltage and branch current.
- 7) Calculate the voltage at node A and B using nodal analysis.



8) Obtain the equivalent resistance at terminals B & C.



9) Find loop current and current flowing through 1Ω using mesh analysis.



CHAPTER 2 AC FUNDAMENTALS (26 marks)

3 marks

- 10) State Faraday's Law of electromagnetic induction.
- 11) State Lenz's law.
- 12) Distinguish between statically induced emf and dynamically induced emf.
- 13) Define and write their unit.
 - a. Inductive reactance
 - b. Capacitive reactance
 - c. Impedance

4 marks

- 14) Define and write their unit.
 - a. Magnetic Flux
 - b. Reluctance
 - c. Inductance
 - d. Capacitance
- 15) Calculate the rms value, average value, peak factor and form factor of a sinusoidal voltage given by $E = 170 \sin 628t$.
- 16) Define
 - a. Instantaneous value
 - b. Maximum value
 - c. RMS value
 - d. Average value
- 17) An alternating current is given by the equation $i = 10 \sin 314t$. Find
 - a. Maximum value
 - b. Value of current after $t = 0.01$ sec
 - c. Frequency
 - d. Time Period
- 18) Draw waveform & phasor diagram, write voltage and current equation and phase relation between them for purely capacitive circuit.
- 19) Show that power consumed in purely inductive circuit is zero when ac is applied.
- 20) Draw waveform and phasor diagram, write voltage and current equation and phase relation between them for ac circuit containing resistance only.
- 21) Draw the waveforms from the following equations:
 - a. $v_1 = V_m \sin \omega t$ and $v_2 = V_m \sin (\omega t - \pi/2)$
 - b. $v = V_m \sin \omega t$ and $i = I_m \sin (\omega t + \pi/2)$

CHAPTER 3 AC SERIES CIRCUITS (10 marks for 1st half part)

3Marks

22) Define power factor and write its significance.

4 marks

23) A resistance of 10Ω & a capacitance of $100\mu\text{f}$ are connected in series across a 230v, 50Hz ac supply. Calculate

- a. capacitive reactance
- b. impedance
- c. current
- d. power factor.

24) Draw phasor diagram and impedance triangle, write voltage and current equation of R-L series circuit.

25) A coil of resistance 10Ω and inductance 0.1H is connected in series with 200V, 50Hz supply. Calculate:

- a. Inductive reactance
 - b. Impedance
 - c. Current
 - d. phase angle between voltage and current.
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