B.Tech. SEM -II (2007 Course) (All Branches) : WINTER - 2018

SUBJECT : ELEMENTS OF ELECTRICAL AND ELECTRONICS ENGINEERING

Day : Friday
Date : 16/11/2018

W-2018-2693

Time : 10.00 AM TO 01.00 PM
Max. Marks : 80

N. B. :

1) **Q. No. 1** and **Q. No. 5** are **COMPULSORY**. Out of remaining attempt **ANY TWO** questions from each section.
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in the **SEPARATE** answer books.
4) Draw neat and labeled diagram **WHEREVER** necessary.
5) Assume suitable data, if necessary.

SECTION – I

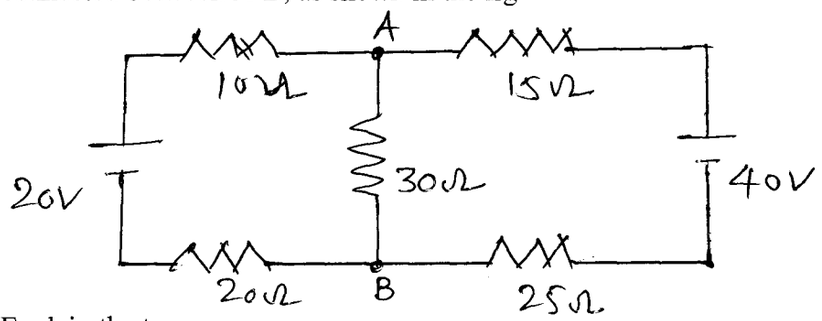
Q. 1 **a)** State and explain Maximum power transfer theorem. **(05)**

b) If v = Vm sin wt is applied across single phase circuit and current flowing through the circuit is $i = Im \sin(wt + \phi)$. Derive the expression for average power consumed in the circuit. **(05)**

c) Define and explain the terms MMF, Flux density, Field intensity, Permeability, Reluctance. **(04)**

Q. 2 **a)** State and explain Kirchhoff's law. **(07)**

b) Using superposition theorem find the current flowing through the resistance connected between A-B, as shown in the fig **(06)**



Q. 3 **a)** Explain the terms: **(07)**

i) Symmetrical system

ii) Phase sequence

iii) Balanced load as related with three-phase system

b) A load of 35 kw operated at 0.8 p.f. lagging when connected to 400V $1\phi, 50Hz$ source. **(06)**

Find:

i) Current in the load

ii) Power factor angle

iii) Impedance

iv) Resistance of load

v) Reactance of load

P. T. O.

Q. 4 **a)** A 20 kVA, 50 Hz, Single Phase Transformer has the iron loss and full load copper loss of 150 and 250 watts respectively. Find the efficiency of the transformer at **(07)**

i) 40 % of full load at unity p.f.

ii) 50 % of full load at 0.8 lagging p.f.

b) Compare electric and Magnetic circuit. **(06)**

SECTION – II

Q. 5 **a)** Draw different waveforms related to full wave rectifier. **(05)**

b) What are different types of resistors? Explain any one in brief. **(05)**

c) Enlist salient features of Moving Iron instruments. **(04)**

Q. 6 **a)** What are the first aid measures against Electric shock? **(07)**

b) Draw schematic diagram of a power system showing voltage levels at each levels (generation, transmission, distribution) **(06)**

Q. 7 **a)** Explain along with a neat block diagram, CRO. **(07)**

b) Write a short note on Electrolytic Capacitors **(06)**

Q. 8 **a)** Differentiate between Moving Coil and Moving Iron instruments. **(07)**

b) Explain the working principle of single phase energy meter along with a suitable diagram. **(06)**

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