(Pages : 3) **8686**

Reg. No. : .....

Name : .....

Combined First and Second Semester B.Tech. Degree Examination, December 2015
(2013 Scheme)
13.108 : BASIC ELECTRICAL ENGINEERING (ABCHMNPSTU)

Time : 3 Hours Max. Marks : 100

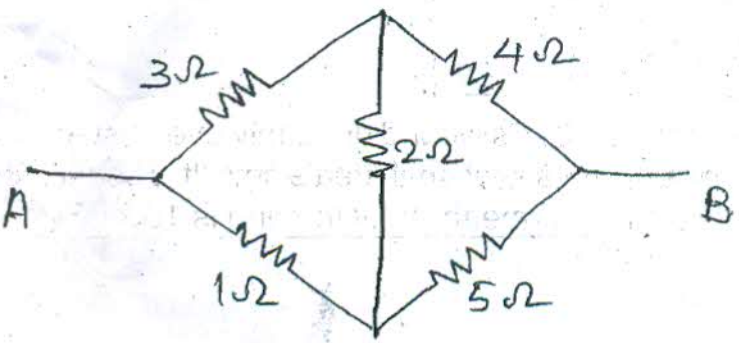
PART – A

Answer **all** questions. **Each** question carries **2** marks.

1. Explain the term dynamically induced emf.

2. Show that the average power consumed by a pure inductor over one complete cycle is zero.

3.



Using star delta transformation calculate the effective resistance between terminals A and B.

4. What is the relation between phase and line values of voltage and current in a 3 phase balanced star connected system ?

5. List the advantages and disadvantages of thermal power generation.

6. Name the various substation equipments.

P.T.O.

7. Derive the emf equation of a transformer.

8. Discuss the need for a dc motor starter.

9. What is the function of a fuse ?. Why is it connected in phase wire ?

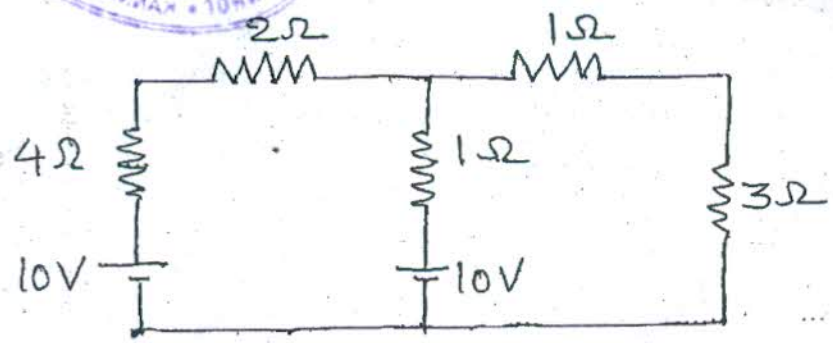
10. What is the function of ballast in a fluorescent lamp circuit ?

PART – B

Answer **any one full** question from **each** Module. **Each** question carries **20** marks.

Module – 1

11. a) Find the current through all the resistors in the circuit given below.



8

b) A coil of 300 turns and of resistance 10Ω is wound uniformly over a steel ring of mean circumference 30 cm and cross sectional area 9 cm^2. It is connected to a supply of 20 V dc. If the relative permeability of the ring is 1500. Find :
   1) the magnetising force
   2) reluctance
   3) mmf
   4) flux. 12

OR

12. a) Derive the RMS value of a sinusoidal waveform. 8

b) A resistance of 4Ω is in series with an inductive reactance 3Ω. The combination is supplied from 100V, 50 Hz supply. Find the
   1) Impedance
   2) Current
   3) Power factor
   4) Apparent power
   5) Power dissipated. 12

Module – 2

13. a) Derive the expression for voltage, current power and power factor for a 3 phase balanced delta connected system. 10

    b) Explain the working principle of single phase energy meter. 10

OR

14. a) With a block schematic diagram explain the working principle of a nuclear power plant. 12

    b) Draw the typical power transmission scheme and explain. 8

Module – 3

15. a) Explain the principle of operation of 3 phase induction motor. 8

    b) Explain briefly different types of dc generators. 12

OR

16. a) Explain the principle of operation of 3 phase alternator and derive the emf equation . 10

    b) Explain the methods of starting of synchronous motors. 10

Module – 4

17. a) With a neat sketch explain pipe earthing. 10

    b) With a diagram explain the working of ELCB. 10

OR

18. a) With a neat diagram explain the construction and working of a sodium vapour lamp. 10

    b) Explain the construction and operation of a lead acid batttery. 10