



Reg. No. :

Name :

**Combined First and Second Semester B.Tech. Degree
Examination, April 2014
(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 statically induced emf.
2. An alternating voltage $V = (100 + j 80)$ volts is supplied to a circuit and the current flowing $I = (-5 + j 12)$ Ampere. Find the impedance of the circuit.
3. Explain the significance of leading and lagging power factor.
4. What do you mean by phase sequence in three phase system ?
5. Name the different sources of Non-conventional energy.
6. What are the advantages of high voltage transmission ?
7. What are the losses occurring in a transformer ?
8. What do you mean by slip of an induction motor ?
9. Give the schematic layout of an LT switch board.
10. Mention the parts of a sodium vapour lamp.

P.T.O.



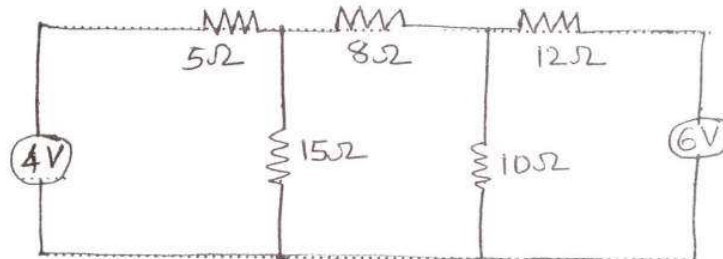
PART – B

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

Module – I

11. a) Calculate the current through 10Ω resistor.

10



b) A mild steel ring of 15 cm mean circumference has a cross sectional area of 3 cm^2 and has a winding of 250 turns on it. The ring is cut through at a point so as to provide an air gap of 1 mm in the magnetic circuit. It is found that a current of 4 A in the winding produces a flux density of 1 Tesla in the air gap find :

- 1) The relative permeability of mild steel
- 2) Inductance of the winding.

10

OR

12. a) Calculate the RMS value of a half rectified sine wave.

10

b) A capacitor of $8\ \mu\text{f}$ takes a current of 1.0 A when ac voltage applied across it is 230 V. Calculate :

- 1) The frequency of applied voltage
- 2) The resistance to be connected in series with the capacitor to reduce the current in circuit to 0.5 A at same frequency.

10

Module – II

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

10

b) Show that the power in 3 phase circuits can be measured using 2 Wattmeter. Draw the vector diagram.

10

OR

14. a) With a neat block diagram explain the method of power generation in a thermal power plant.

12

b) Explain the different equipments in a substation.

8



Module – III

15. a) Briefly explain the constructional details of a dc generator. 10
b) Explain the principle of operation of synchronous motors. 10

OR

16. a) Briefly explain the constructional details of a three phase transformer. 10
b) Explain the different methods of starting of single phase induction motor. 10

Module – IV

17. a) With a neat sketch explain plate earthing. 10
b) Explain different types of tariffs. 10

OR

18. a) With a neat diagram explain construction and working of Mercury vapour lamp. 10
b) What are the charging methods of lead acid battery ? 10
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