



Reg. No. : .....

Name : .....

Combined First and Second Semester B.Tech. Degree Examination,  
May/June 2012  
(2008 Scheme)

08-108 : BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Time : 3 Hours

Max. Marks : 100

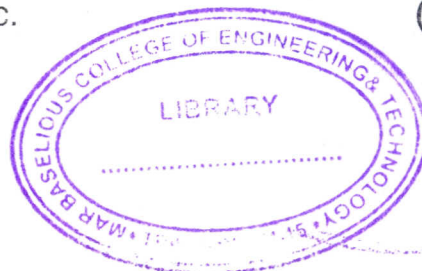
**Instruction :** Answer **all** questions from Part **A** and three **full** questions from Part **B** choosing **not** more than **one** question from **each** Module.

PART – A

1. Explain Kirchoff's law with examples.
2. Explain the terms power and energy in a Electrical Circuits.
3. A coil of 1000 turns gives rise to a magnetic flux of 2 m Wb, when carrying a certain current. If this current is completely reversed in 0.2 second, what is the average emf induced in the coil ?
4. Derive an expression for rms and average value of a sinusoidal voltage waveform.
5. Explain the significance of leading and lagging power factor.
6. Derive the emf equation of a transformer.
7. What is meant by primary and secondary transmission and distribution system ?
8. Explain the working principle of Zener voltage regulator.
9. Explain the static characteristics of a germanium junction diode.
10. Write the applications of SCR and triac.

(10×4=40 Marks)

P.T.O.





## PART – B

## Module – I

11. a) Briefly explain the different types of Induced emf. 6
- b) A coil of 300 turns and of resistance  $10\ \Omega$  is wound uniformly over a steel ring of mean circumference 30 cm and cross-sectional area  $9\ \text{cm}^2$ . It is connected to a supply of 20 V dc. If the relative permeability of the ring is 1500, find (i) the magnetising force (ii) the reluctance (iii) the mmf and (iv) the flux. 10
- c) Derive the expression for power in a purely inductive ac circuit. 4
12. a) Derive the expression of voltage, current, power and power factor-for a 3 phase delta connected balanced system. 10
- b) An ohmic resistance is connected in series with a coil across 230 V, 50 Hz supply. The current is 1.5 A and the voltage across the resistance and the coil are 90 V and 180 V respectively. Calculate the resistance and inductance of the coil and phase difference between the current and supply voltage. 10

## Module – II

13. a) Briefly write the constructional details of 3 phase transformer. 5
- b) With the help of schematic layout, briefly describe the nuclear power plant. 10
- c) Explain the necessity of earthing in an electrical installations. 5
14. a) What are the advantages of High voltage transmission ? 4
- b) Explain the different equipments used in a substation. 6
- c) With neat sketch, explain the working of ELCB. 10

## Module – III

15. a) Define the terms static and dynamic resistance of a diode. 4
- b) Explain the VI characteristics of zenor diode. 6
- c) With a block diagram explain the working of SMPS. 10
16. a) Draw and explain the working of full wave diode rectifier with resistive load and derive the expressions for  $V_{dc}$  and  $V_{rms}$ . 12
- b) Write short notes on the following : 8
- i) Photo diode
  - ii) Shunt capacitor filter
  - iii) Resistance strain guage
  - iv) LED.