



Reg. No. :

Name :

**Combined First And Second Semester B.Tech. Degree
Examination, April 2016
(2008 Scheme)**

08-108 : BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Time : 3 Hours

Max. Marks : 100

Instructions : 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 Faraday's and Lenz's law.
2. Define the terms 'field strength' and 'reluctance' in a magnetic circuit.
3. A coil of 1500 turns gives rise to a magnetic flux of 2.5 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 current wave form.
5. Distinguish between active and reactive power.
6. Write the principle of operation of a single phase transformer.
7. Explain the necessity of earthing in a electrical installation.
8. Explain the working of fluorescent lamp.
9. Write the applications of transducers and working of a resistance strain guage.
10. Explain the working of zener voltage regulator. **(10×4=40 Marks)**



PART – B
Module – I

- 11. a) Derive the expression for power in a purely capacitive circuit. 4
- b) An alternating current varying sinusoidally with a frequency of 50 Hz has a rms value of 10 A. At what time measured from negative maximum value, the instantaneous current will be $5\sqrt{2}$ A ? 6
- c) A choke coil is connected to 230 V, 50 Hz supply. An ammeter is connected in series with the choke coil reads 20 A. On increasing the frequency to 100 Hz, the same ammeter reads 10 A. Calculate the resistance and inductance of the coil. 10

- 12. a) Derive the expression of voltage, current, power and powerfactor for a 3-phase star-connected balanced system. 10
- b) Draw and explain the working of single phase energy meter. 10

Module – II

- 13. a) A 40 kVA, 1600/200 volts transformer has 110 turns on secondary, calculate (i) number on turns on primary winding (ii) secondary current on full load (iii) the cross-sectional area of the core, if the maximum flux density is 1.2 tesla. 6
- b) Briefly discuss about any four methods on non-conventional energy sources. 8
- c) Explain a typical power transmission and distribution scheme in a power system. 6

- 14. a) Explain the different equipments used in a substation. 8
- b) Draw the schematic wiring diagram of an LT installation. 6
- c) Compare the use of a ordinary type fuse and a miniature circuit breaker in LT installation. 6

Module – III

- 15. a) Explain the static characteristic of a silicon junction diode. 5
- b) Discuss the VI characteristic of zener diode. 5
- c) With the block diagram explain the working of UPS. 10

- 16. a) Draw and explain the working of a full wave bridge rectifier with resistive load and derive the expression for V_{dc} and V_{rms} . 12
- b) Write short notes on the following : 8
 - i) SCR and Triac ii) SMPS iii) Thermistor iv) LVDT.