

Roll No.

Total No. of Pages: 02

Total No. of Questions: 09

**B.Tech. (2011 Onwards) (Sem. – 1, 2)**  
**BASIC ELECTRICAL AND ELECTRONICS ENGINEERING**

**M Code: 54097**

**Subject Code: BTEE-101**

**Paper ID: [A1104]**

**Time: 3 Hrs.**

**Max. Marks: 60**

**INSTRUCTIONS TO CANDIDATES:**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTIONS - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying EIGHT marks each.
4. Select at least TWO questions each from SECTION - B & C.

**SECTION A**

1. a) Define temp coefficient of resistance and give its units.  
b) Energy meter is
  - i) An indicating instrument
  - ii) An integrating instrument
  - iii) A recording instrument
  - iv) An absolute instrument
- c) Give the relation between phase and line values of voltage and current for star connection.
- d) Give reasons why are all equipments connected parallel to the supply.
- e) What are the similarities in magnetic and electric circuits?
- f) The synchronous speed of induction motor is 1500 r.p.m and rotor speed is 1440 r.p.m. Find slip.
- g) What is gauge factor?
- h) Draw symbols of BJT and zener diode.
- i) Convert  $(1245)_{10}$  into Binary number system.
- j) Draw symbols of EX-NOR and AND gate.

## SECTION B

2. Define rms, average and form factor of a sinusoidal alternating voltage.
3. Derive an expression for resistivity of a conductor material and explain the effect of temperature on it.
4. The efficiency of a 1000 KVA, 110/220V, 50 HZ single phase transformer is 98.5% at half load at 0.8 power factor leading and 98.8% at full load at unity power fact. Find:
  - a) Iron loss
  - b) Full load copper loss.
5. Discuss principle of operation of a 3-phase induction motor. What is frequency of rotor currents? Discuss.

## SECTION C

6. Define transducer. State its classifications with 4 examples of passive type transduction.
7.
  - a) What are the uses of Digital Multimeter?
  - b) Discuss applications of Digital Multimeter.
8. Describe the operation of J-K flip flop with suitable wave-form
9. What are universal gates and why they are called so? How can OR and XOR gates be realized using NOR gates only.