

**Roll No.**

**Total No. of Pages : 02**

**Total No. of Questions : 18**

**B.Tech. (Aerospace Engg./Automobile Engg./Automation & Robotics/BT/CE/CSE/Electronics & Electrical Engg./EE/ECE/Electrical & Electronics Engg./IT/ME/Textile Engg.) (2012 to 2017) (Sem.-1,2)**

# BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

**Subject Code : BTEE-101**

**M.Code : 54097**

**Time : 3 Hrs.**

**Max. Marks : 60**

### INSTRUCTIONS TO CANDIDATES :

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

## SECTION-A

**Answer briefly :**

1. Differentiate between root mean square value and average value.
2. What do you mean by the term EMF? Discuss.
3. Explain the principle of a D.C. generator.
4. What do you mean by mutual-inductance? Explain.
5. Compare magnetic and electric circuits.
6. List the significance of T Flip flop.
7. Explain its principle of operation of thermistor.
8. List the various applications of digital multi-meter.
9. Why truth table is required? Write down the truth table of NOR gate.
10. What is the significance of Octal and Hexadecimal number system? Discuss.

### SECTION-B

11. Find the three unknown currents ( $I_1$ ,  $I_2$  and  $I_3$ ) and three unknown voltages ( $V_{ab}$ ,  $V_{bd}$  and  $V_{cb}$ ) in the circuit given below using Kirchoff's Laws : (3,3,2)

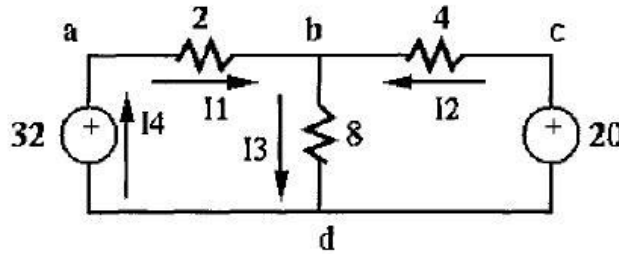


Fig.1

12. A series L-R-C circuit has a sinusoidal input voltage of maximum value 12 V. If inductance,  $L = 20 \text{ mH}$ , resistance,  $R = 80\Omega$ , and capacitance,  $C = 400 \text{ nF}$ , determine :
- The resonant frequency, (2)
  - The value of the p.d. across the capacitor at the resonant frequency, (2)
  - The frequency at which the p.d. across the capacitor is a maximum, (2)
  - The value of the maximum voltage across the capacitor. (2)
13. Explain the construction and working of a single phase transformer. Also define the terms efficiency and voltage regulation with respect to transformer. (8)
14. Describe the construction and working principle of synchronous machines. (8)

### SECTION-C

15. Discuss the principle of operation and applications of bipolar junction transistor. Also draw its characteristics. (8)
16. Explain the principle of operation, construction and applications of LVDT. (8)
17. Discuss the following :
- Zener Diode (4)
  - Regulated Power supply (4)
18. Explain the logical diagram and working of JK and D flip flops. Also discuss the limitations of clocked JK flip-flop. (6, 2)

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**