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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Civil) (Sem.–2) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING Subject Code : EE-101 Paper ID : [A0126]

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

- **l.** Write short notes on :
 - (a) Define power and energy.
 - (b) Comment upon the dependency of the resistance on the temperature.
 - (c) Explain the principle of a transformer
 - (d) Discuss the principle of indicating instruments.
 - (e) Discuss the importance of root mean square value in Ac circuits.
 - (f) Explain the principle of Hall effect transducer.
 - (g) What is the significance of rectifiers? Explain.
 - (h) List the various characteristics of Thyristors.
 - (i) Discuss the significance of an integrated circuits.
 - (j) List the disadvantage of R-S Flip flops.



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SECTION-B

2. Find the currents in different branches of the circuit shown in the Figure 1.



Figure 1

- 3. A parallel resonance network consisting of a resistor of 60Ω , a capacitor of 120μ F and an inductor of 200mH is connected across a sinusoidal supply voltage which has a constant output of 100 volts at all frequencies. Calculate, the resonant frequency, the quality factor and the bandwidth of the circuit, the circuit current at resonance and current magnification.
- 4. Explain the principle, construction, working and applications of a D.C. generator in detail.
- 5. Explain the principle and working of PMMC instrument. Compare these instruments with other measuring Instruments.

SECTION-C

- 6. Explain the basic principles of Capacitive and Piezoelectric transducers. Explain any one of these transducers in detail.
- 7. Explain the principle of operation, characteristics and applications of BJT. Also compare it with FET.
- 8. Explain the PIN diagram and description of
 - (i) IC 555
 - (ii) IC 741
- 9. Draw the logical diagram and explain the working of JK and D flip flops.