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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech (All Branches Physics Group) (2018 Batch) (Sem.–1,2)

BASIC ELECTRICAL ENGINEERING

Subject Code : BTEE-101-18

M.Code : 75339

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

1. **Answer following questions in brief.**
 - a) Differentiate active and passive components.
 - b) Define R.M.S. value of A.C.
 - c) Differentiate phase and phasor difference with example.
 - d) What are various losses in transformer?
 - e) Give the working principle of boost converter.
 - f) Draw the static characteristics of thyristor.
 - g) What do you mean by duty ratio control in power converter?
 - h) Write the working principle of rotating magnetic fields.
 - i) List various types of wires and cables.
 - j) Significance of torque slip characteristics .

SECTION-B

2. Discuss in brief construction and principle of single phase induction motor. Also explain the losses.
3. Explain the working and basic principle of Single Phase Transformer.
4. Write a short note on :
 - a) Magnetization curve or B-H curve.
 - b) Kirchoff's voltage and current law.
5. Derive the relationship between voltage and current in star and delta connections.

SECTION-C

6. Explain the necessity of earthing in an electrical installation. Also state the points to be earthed in internal / wiring system of a residential building.
7. Open-circuit and short-circuit tests were conducted on a 50 kVA, 6360/240 V, 50 Hz, single phase transformer in order to find its efficiency. The observations during these tests are :
 - (a) Open-circuit test : Voltage across primary winding 6360 V. Primary current, 1.0 A. power input 2 kW.
 - (b) Short-circuit test : Voltage across primary 180 V , current in secondary winding 175 A, power input 2 kW. Calculate the efficiency of the transformer when supplying full load at power factor of 0.8 lagging.
8. Critically examine the difference between single phase and three phase voltage source inverters.
9. Explain the construction and working of synchronous generators.

NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC against the Student.