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BEE-041

00145

Diploma in Electrical and Mechanical Engineering

Term - End Examination

December, 2010

BEE-041 : APPLIED ELECTRICAL TECHNOLOGY

Time : 2 hours *Maximum Marks : 70*

Note : *Question No.1 is* ***compulsory****. Attempt any four questions from the remaining questions. Assume any missing data, use of calculator is permitted.*

1. (A) Choose the appropriate answer of the following questions. **7x1=7**

(i) The main purpose of using core in a transformer is to

(a) decreases iron losses.

(b) Prevent eddy current loss.

(c) Eliminate magnetic hysteresis.

(d) decrease reluctance of the common magnetic circuit.

(ii) Insulation oil in transformer should have

(a) Poor emulsion resistance.

(b) High viscosity.

(c) High dielectric strength.

(d) Nature of liquid must be alkali.

(iii) One of the characteristics of a single -phase motor is that

(a) is self starting.

(b) is not self starting.

(c) requires only one winding.

(d) can rotate in one direction only.

(iv) Which type of power plant has lowest running cost.

(a) Nuclear plant (b) Hydro plant

(c) Steam plant (d) Gas plant

(v) Minimum height for overhead transmission line for more than 165 kV is

(a) 20 Feet (b) 23 Feet

(c) 25 Feet (d) 27 Feet

(vi) What is maximum permissible resistance of earth for Large Power Stations.

(a) 0.3 ohm (b) 0.9 ohm

(c) 0.5 ohm (d) 1.5 ohms

(vii) Leakage current in internal wiring should not be more than _____ of maximum supply current.

(a) $\frac{1}{15000}$ (b) $\frac{1}{5000}$

(c) $\frac{1}{10000}$ (d) $\frac{1}{20000}$

B. Draw the symbol of following particulars used in electrical circuits. 7

(i) Two-way switch.

(ii) Push button switch.

(iii) Fan regulator.

(iv) Electric buzzer.

(v) Choke coil.

(vi) Multimeter.

(vii) Variable condenser.

2. (a) Explain the various methods of cooling used in transformer. 7

(b) What are the various connections of 3-phase transformer. Explain in brief. 7

3. (a) Draw the layout of a thermal power plant and write the functions of all component of plant. 11

(b) Why does a single phase motor fail to start? 3

4. (a) Explain the construction, operation and applications of hysteresis motor. 7

(b) What are the non - conventional sources of energy, explain in brief. 7

5. (a) A lighting load has 20, 100 watt lamps operated as 11

6 lamps for 2 hrs (6pm to 8pm)

10 lamps for 2 hrs (8pm to 10pm)

5 lamps for 2 hrs (10pm to 12pm)

Determine connected load, maximum demand, the demand factor and the daily load factor.

(b) What are the characteristics of insulating oil in transformers ? 3

6. (a) Explain the various components of overhead transmission line. 7

(b) Explain the various faults occuring in underground cables and what are the causes of failure of underground cables ? 7

7. (a) Discuss various types of wiring systems, and explain their advantages and disadvantages. 7

(b) Explain pipe earthing with diagram. Aslo discuss the precautions to be made during the process of providing pipe earthing. 7

8. Write down short notes on ***any two*** of the following. **2x7=14**

(a) Installation of Transformer.

(b) Nuclear Power Plant.

(c) Construction of 3-Phase Transformer.

(d) Neutral Grounding.