

00785

**Diploma in Electrical and Mechanical
Engineering**

Term - End Examination

June, 2012

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. Indicate 'True' or False' for the following : **14x1=14**
- (a) Air circuit breakers are used for voltage above 12 kV.
 - (b) PVC can be safely used upto temperature of 250°C .
 - (c) In an induction motor, the noise mainly due to variation of leakage flux path of zig-zag leakage flux.
 - (d) The power factor of an induction motor depends upon its magnetizing current and short circuit current.
 - (e) The phenomenon of skin effect occurs mostly in stator and rotor windings of a squirrel cage motor.

- (f) Under no load condition the current in a transmission line is due to corona effects.
- (g) Consumers having low power factor equipment are advised to install capacitor bank.
- (h) The phase sequence of a three phase alternator can be reversed by interchanging the terminals of its field winding.
- (i) The armature reaction of synchronous alternator is determined by the power factor of the connected load.
- (j) 'Losses' in a transformer are the inefficiency of the core.
- (k) The 'Load current' is the amount of current supplied to the load.
- (l) 'Single phase' has two conductors and 'three phase' has three conductors.
- (m) Single phase transformers are used on a three phase supply to make three phase transformer.
- (n) Leakage current in internal wiring should not be more than $\frac{1}{5000}$ of maximum supply current.

- 2. (a) Explain the double field revolving theory for single phase AC supply and show that starting torque is zero. 7
- (b) Explain the testing and commissioning of underground cables. 7

3. (a) Compare various wiring system based on material used, their advantages and disadvantages. 7
- (b) Explain the maintenance of 1000 kVA Transformer. 7
4. (a) What are the non-conventional energy sources, explain each in brief. 7
- (b) With the help of diagram explain Hydro Power Plant. 7
5. (a) Explain use of relays in power system with construction and operational features of any one important relay. 8
- (b) What is need of transposition of conductors ? How it is done ? 6
6. (a) What is lightning ? Explain working of arching earths and write its applications. 7
- (b) Explain the working principle of hysteresis motor and write its application. 7
7. Explain various protection schemes used for alternators and transformers. 14
8. Write short notes on *any two* of the following : $7 \times 2 = 14$
- (a) High voltage protection
- (b) SELSYNS
- (c) Repulsion motor
- (d) Earth resistance and its measurement
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