

**DIPLOMA IN ELECTRICAL ENGINEERING
(DELVI)**

Term-End Examination

00225

December, 2014

**BIEE-036 : ELECTRICAL INSTALLATION
AND SYSTEM**

Time : 2 hours

Maximum Marks : 70

Note : *Question no. 1 is compulsory. Answer any four questions from the remaining ones. Use of scientific calculator is allowed. All questions carry equal marks.*

1. Choose the appropriate one. $7 \times 2 = 14$

- (a) Sub-main boards in a large wiring installation are located
- (i) near the load centre
 - (ii) near the main board
 - (iii) at the far end of the building
 - (iv) at the centre of the building
- (b) The size of neutral wire as compared to that of live wire should be
- (i) half
 - (ii) equal
 - (iii) double
 - (iv) one and a half times

- (c) Sheath is used in the cables to
 - (i) provide strength to the cable.
 - (ii) provide proper insulation.
 - (iii) avoid the chances of the rust on the strands.
 - (iv) prevent the moisture from entering the cable.

- (d) Maximum number of points which can be provided in a single lighting circuit for a house wiring scheme is
 - (i) 5
 - (ii) 6
 - (iii) 8
 - (iv) 10

- (e) For staircase lighting, the following switch is used :
 - (i) Tumbler switch
 - (ii) Two-way switch
 - (iii) Grid switch
 - (iv) Reversing switch

- (f) Lightning arrester is connected to the feeders
 - (i) at the end
 - (ii) at the beginning
 - (iii) at both ends
 - (iv) in the middle

(g) The type of insulator used at the dead end of a high tension line is

- (i) Pin insulator
- (ii) Shackle insulator
- (iii) Suspension type insulator
- (iv) Tension type disc insulator

2. (a) Specify the different types of earth electrodes used in earthing.

(b) Compare the different types of domestic wiring. $2 \times 7 = 14$

3. Estimate the quantity of material required for providing an electrical installation in an office room $15 \text{ m} \times 10 \text{ m} \times 4 \text{ m}$, which requires three ceiling fans, three tubelight fittings and a power plug in surface conduit system of wiring. Also draw the circuit diagram of the above arrangement. 14

4. (a) Compare the advantages and disadvantages of overhead and underground feeders. 7

(b) State $2 \times 3 \frac{1}{2} = 7$

- (i) why copper conductors are not used for transmission lines.
- (ii) the necessity for connecting a lightning arrester in feeders.

5. Briefly explain why

$7 \times 2 = 14$

- (i) a standard wire gauge is used.
- (ii) cables are stranded.
- (iii) a conduit in case of concealed conduit wiring is earthed.
- (iv) iron clad water-tight switches are used.
- (v) lamp holders and ceiling roses are used.
- (vi) fuse is not used in the neutral.
- (vii) ring main system is used.

6. Write short notes on the following :

$4 \times 3 \frac{1}{2} = 14$

- (a) Classification of substations
 - (b) Materials required for underground service connection
 - (c) Rules and regulations for providing a service connection to a consumer
 - (d) Types of line supports
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