BIEEE-005

DIPLOMA IN ELECTRICAL ENGINEERING (DELVI)

Term-End Examination

June, 2016

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BIEEE-005 : UTILIZATION OF ELECTRICAL ENGINEERING

Time : 2 hours   *Maximum Marks : 70*

*Note : Question no. 1 is **compulsory**. Answer any **four** questions from questions no. 2 to 7. Use of scientific calculator is permitted. Assume suitable value, in case required data is missing. All questions carry equal marks.*

1. In the following questions choose the most appropriate answer :   *7×2=14*

    (a) Which of the following lamps can be considered to be the most resistive load ?
        (i)   Incandescent lamp
        (ii) CFL
        (iii) Neon lamp
        (iv) Fluorescent lamp

(b) Power supply frequency for 25 kV single phase traction system is

    (i) $16\dfrac{2}{3}$ Hz

    (ii) 25 Hz

    (iii) 50 Hz

    (iv) 60 Hz

(c) Welding transformer used in resistance welding will

    (i)   Step up current

    (ii) Step up voltage

    (iii) Step down current

    (iv) Step down voltage

(d) Nichrome wire can be safely used for heating up to

    (i)   2000°C

    (ii) 1600°C

    (iii) 1450°C

    (iv) 1150°C

(e) Vapour compression refrigeration system is not usually used in

    (i)   Domestic refrigerator

    (ii) Big commercial cold storage plant

    (iii) Domestic air-conditioner

    (iv) Small water coolers

(f) During refrigeration process, heat is absorbed by the coolant during

(i) Condensation

(ii) Sublimation

(iii) Evaporation

(iv) Solidification

(g) Lumen/Watt is a unit of

(i) light flux

(ii) luminous intensity

(iii) brightness

(iv) luminous efficiency

2. (a) Define and explain the laws of illumination with the help of neat sketch and suitable examples. . 7

(b) A lamp of MSCP of 1000 is suspended 2·7 meters above the working plane. Calculate illumination directly below the lamp at the working plane and illumination at a point 2·5 meters away on the horizontal plane, from vertically below the lamp. 7

3. (a) Explain the construction and working of sodium vapour lamp with the help of a neat sketch. 7

(b) Explain the working of fluorescent tube light with the help of a circuit diagram, and also discuss the function of choke and starter. 7

4. (a) With the help of neat sketch, explain vapour compression cycle and give the function of each component of the system. *7*

(b) What is a refrigerant ? Give any two properties of a refrigerant and name any two refrigerants. *7*

5. (a) Draw a block diagram of electric locomotive and write the functions of the important equipments. *10*

(b) Write advantages and disadvantages of electric traction. *4*

6. (a) Give classification of electric heating and briefly explain direct resistance heating. *7*

(b) Enumerate various types of welding methods and explain resistance welding. *7*

7. Write short notes on any *two* of the following : *2×7=14*

(a) Current collection schemes in electric traction

(b) Electrical wiring diagram of a domestic refrigerator

(c) Design of lighting schemes

(d) Modes of transmission of power in electric drives