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BIEEE-005

DIPLOMA IN ELECTRICAL ENGINEERING (DELVI)

Term-End Examination

00133

December, 2016

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 values, in case required data is missing. All questions carry equal marks.*

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

(a) Lumen/watt is a unit of

(i) Light flux

(ii) Luminous intensity

(iii) Brightness

(iv) Luminous efficiency

(b) The speed of a train in traction system calculated considering time for stop and time for run is called

(i) Schedule speed

(ii) Average speed

(iii) Notching speed

(iv) Free running speed

(c) Which of the following machines is never run at no load ?

(i) Synchronous motor

(ii) D.C. series motor

(iii) D.C. shunt motor

(iv) Induction motor

(d) Welding transformer is designed for

(i) Low current, very high voltage

(ii) High current, high voltage

(iii) High current, low voltage

(iv) Low current, low voltage

(e) The period during which the electric train runs with engine off due to its own momentum is called

(i) Acceleration period

(ii) Free run period

(iii) Coasting period

(iv) Retardation period

(f) Enclosure used in motors that are used in damp situations like pumping station is

(i) Drip proof type

(ii) Open type

(iii) Protected type

(iv) Pipe ventilated type

(g) Heating method preferred in heating of non-metallic parts such as wood, plastic, etc. is called

(i) Resistance heating

(ii) Dielectric heating

(iii) Induction heating

(iv) Arc heating

2. (a) Two lamps are 16 metres apart and are fitted with a 100 c.p. lamp at a height of 6 metres above the ground. Calculate the illumination on the ground

(i) under each lamp, and

(ii) midway between the lamps. 7

(b) With the help of a neat diagram, explain the construction and working of a mercury vapour lamp. 7

3. (a) Explain Individual and Group drives with the help of suitable examples and give any one advantage of both the drives. 7

(b) Draw and explain the electrical circuit diagram of a domestic air-conditioner. 7

4. (a) Enumerate the various systems of electric traction and explain any one system in brief. 7

(b) What are the different types of electric braking used in a traction system ? Briefly explain any one of them with the help of a neat sketch. 7

5. (a) Draw the starting and running characteristics of a d.c. series motor and justify its use in cranes and lifts on the basis of its characteristics. 7

(b) Draw and explain the working of a direct arc furnace. 7

6. Give the classification of electric heating. Explain the construction and working of a direct core type and a coreless induction furnace with the help of neat sketches. *4+5+5=14*

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

(a) Vapour Compression Cycle

(b) Speed-time curve for urban, suburban and main line services

(c) Factors for selection of a motor in an electric drive

(d) Dielectric Heating