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BIEEE-005

DIPLOMA IN ELECTRICAL ENGINEERING (DELVI)

00126 **Term-End Examination**

June, 2015

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.*

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

(a) One of the following lamps is popular as linear load :

(i) Incandescent lamp

(ii) Fluorescent lamp

(iii) CFL

(iv) Neon lamp

(b) The heat generated in arc welding is in the range of

(i) 1500°C – 2500°C

(ii) 2500°C – 3500°C

(iii) 3500°C – 4500°C

(iv) 4500°C and above

(c) An open welding arc can be sustained at

(i) 2 volts

(ii) 20 volts

(iii) 200 volts

(iv) 2000 volts

(d) In traction system the following motor can be used :

(i) Shunt motor

(ii) Series motor

(iii) Hysteresis motor

(iv) Synchronous motor

(e) The most common electrical drives used in industry or factory are

(i) DC motor drives

(ii) Synchronous motor drives

(iii) Universal motors

(iv) Induction motors

(f) For successful running of DC series motors, during starting

(i) load torque cannot be very high

(ii) load torque cannot be medium

(iii) load torque can be zero

(iv) load torque cannot be zero

(g) During refrigeration process, heat is released by the coolant during

(i) Condensation

(ii) Evaporation

(iii) Sublimation

(iv) Solidification

2. (a) Write about staircase switching. A staircase lamp is controlled by staircase switching from two floors. Draw a self-explanatory circuit diagram to illustrate. Explain the switching operation. 7

(b) An electrician has to install 20, 100 W lamps sourced from the same energy meter. Draw a detailed single line diagram, starting from service connection up to the loads, showing clearly energy meter, circuit, sub-circuits and distribution of load.

Comment on the selection of circuit and sub-circuits. 7

3. (a) Discuss any two types of electrodes used in arc welding. *7*

(b) Write down any seven electrode materials used for arc welding. *7*

4. Explain briefly the following types of electrical drives : *14*

(a) Group Drive

(b) Individual Drive

(c) Multi-Motor Drive

5. Explain the working principle of arc furnaces and describe with the help of a sketch, the construction and working of any one type of arc furnace. *14*

6. (a) What do you mean by "Electric traction" ? How are traction systems classified ? *7*

(b) Explain how regenerative braking can be obtained in DC locomotive. *7*

7. Draw the electric circuit of a refrigerator and explain its working. How can the temperature inside the refrigerator be adjusted ? *14*
