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BIEEE-011

B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

Term-End Examination

December, 2015

BIEEE-011 : ELECTRIC ENERGY UTILIZATION

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. Each question carries equal marks. Use of scientific calculator is allowed.*

1. (a) What are the requirements of an ideal traction system ? Also, write the advantages of electrical traction over other non-electrical systems of traction. 7

(b) Explain the basic principle involved in the rheostatic braking of DC motors used in traction. 7

2. A train is required to run between two stations 1·6 km apart at the average speed of 40 km/hr. The acceleration and retardation during coasting and braking are 2 km/h/s and 0·16 km/h/s respectively. Assuming quadrilateral approximation of speed-time curve, determine

   (a) the duration of acceleration, coasting and braking periods, and

   (b) the distance covered during these periods. *14*

3. (a) Explain different methods of induction heating. Give some applications of induction heating. *7*

   (b) Explain the construction and operation of a fluorescent tube and compare it with a tungsten filament lamp. *7*

4. (a) State Faraday's laws of electrolysis and explain them clearly. *7*

   (b) Explain a refrigeration cycle by means of a neat sketch. *7*

5. (a) Enumerate the various factors to be considered while designing street lighting. *7*

   (b) Draw a complete diagram showing therein different components of an air-conditioning plant. What is the function of each component ? *7*

6. (a) Define the term 'welding'. Enumerate the various welding processes. 7

(b) What is a polar curve ? How is it useful to an illumination engineer ? 7

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

(a) Laws of Illumination

(b) (i) Coefficient of Performance (CoP)

(ii) A tonne of refrigeration

(c) Electroplating and its applications