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BIEEE-011

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

00703 **Term-End Examination**

June, 2018

BIEEE-011 : ELECTRIC ENERGY UTILIZATION

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Use of scientific calculator is allowed. Assume any suitable data wherever not provided.*

1. What is meant by 'Electric Traction' ? Discuss various factors on which final choice of traction system depends. *10*

2. Discuss the suitability of dc series machine for regenerative braking. What types of motors find application in traction work ? *10*

3. Why is electric heating preferred over other forms of heating ? Where would you recommend electric arc furnaces ? *10*

4. An electric furnace consuming 5 kW takes 15 minutes to just melt 4 lbs. of aluminium, the initial temperature being 15°C. Find the efficiency of the furnace. Specific heat of aluminium = 0·212, melting point = 658°C and latent heat of fusion = 76·8 cal. per gram. *10*

5. If a lamp of 200 C.P. is placed 1 metre below a plane mirror which reflects 90% of light falling on it, determine the illumination at a point 3 metres away from the foot of the lamp which is hung 4 metres above the ground. *10*

6. Describe various light fittings used for indoor lighting giving applications of each one of them. What are the qualities sought in fittings meant for outdoor installations ? *10*

7. Describe the electric circuit of a refrigerator. Why is it necessary to maintain constant voltage for the refrigerator ? *10*

8. A train runs with an average speed of 40 kmph. Distance between stations is 2 km. Values of acceleration and retardation are 1·5 kmph and 2·5 kmph, respectively. Find the maximum speed of the train, assuming trapezoidal speed-time curve. *10*

9. Write short notes on any ***two*** of the following : *2×5=10*

(a) Hybrid Electric Vehicles

(b) Electric Welding

(c) Electric Braking