Total No. of Questions :5] *[Total No. of Printed Pages : 2*

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EX - 501

B.E. V Semester

Examination, June 2016

Utilization of Electrical Energy

Time: Three hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) State Inverse square law and Lambert's cosine law of illumination.
   b) State at least four differences between Incandescent Lamp and Fluorescent Lamp.
   c) Compare the various features of industrial lighting and domestic lighting.
   d) Two similar lamps having uniform intensity 500 CP in all directions below the horizontal are mounted at a height of 4m. What must be the maximum spacing between the lamps so that the illumination on the ground midway between the lamps shall be at least one-half the illuminations directly under the lamps.

   OR

   Discuss about flood lighting in detail.

2. a) What is high-frequency eddy current heating?
   b) Why only D.C supply is used in case of carbon arc welding?
   c) What are the advantages of coated electrodes in welding process?
   d) What advantages does graphite electrode process over carbon electrode?

OR

With a neat sketch explain the working principle of coreless type induction furnace.

3. a) Explain the electric braking by plugging.
   b) Define specific energy consumption.
   c) Explain why a DC series motor is ideally suited for traction purpose.
   d) A train has schedule speed of 32 kmph over a level track distance between two stations being 2km. The duration of stop is 25s. Assuming the braking retardation of 3.2 kmphps and the maximum speed is 20% greater than the average speed. Determine the acceleration required to run the service.

   OR

   Define specific energy output and specific energy consumption.

4. a) Derive the equations of heat time curve and cool time curve.
   b) Why electrical drives produces noise? How it is reduces?
   c) State different types of drives and give three advantages and disadvantages of any one of them.
   d) Explain what is mean by individual drive and group drive discuss their relative merits and demerits.

   OR

   Explain what is mean by Load Equalization and how it is accomplished.

5. a) What are the advantages and disadvantages of track electrification?
   b) What are factors affecting energy consumption?
   c) Derive expression for the tractive effort for a train on a level track.
   d) Explain briefly the tractive effort required, while the train is moving up the gradient and down the gradient.

   OR

   How electric vehicles are better than other conventional vehicles.

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