

EX - 501

B.E. V Semester

Examination, December 2012

Utilization of Electrical Energy

Time: Three hours

Maximum Marks : 70/100

Note: Attempt *One* question from each unit
All questions carry equal marks.

Unit - I

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1. (a) State the laws of illumination?
- (b) Two lamps of 200 cp. and 400 c.p. each are mounted 8 m. apart on lamp posts of 4 m height. Calculate illumination 3 m., away from each post between the two lamps, on the line joining the base of the two lamps

OR

2. (a) The illumination in a office 30m x 10m is to have a value of 2.50 lux and is to be provided by a number of 300 w filament lamps. If the coefficient of utilisation is 0.4 and the depreciation factor 0.9. Determine the number of lamps required.

The luminous efficiency of each lamp is 14 lumen/watt.

- (b) Define the following terms.

(a) m.h.c.p.

- (b) Lumination flux
- (c) Luminous intensity
- (d) illumination

Unit - II

3. (a) What are the requirements of a good heating material and in what circumstances the heating element fails.
- (b) Nickel coating of 1 mm thickness is to be built on a cylindrical surface 15 cms diameter and 20 cms long in 1½ hrs. Calculate the electrical energy needed if E.C.E. of nickel is 0.3043mgm/Coulomb, specific gravity 8.9 and voltage used in electroplating is 10V.

OR

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4. (a) With a neat sketch, explain electron beam welding.
- (b) Explain in brief.
- (a) Electro deposition
 - (b) Dielectric Heating

Unit - III

5. (a) Draw and explain the typical speed-time curve of a train running on main line.
- (b) What do you understand by the specific energy consumption and what factors affect the same.

OR

6. (a) Explain in brief (2 x 10)
- (1) Coefficient of adhesion
 - (2) Advantage of electric drives.

Unit - IV

7. (a) What are the merits and demerits of group and individual drives.
- (b) How load equalisation is done? What are its advantages.

OR

8. (a) Discuss the various factors which are required to be considered for selecting a motor for a particular industry.
- (b) Discuss the braking of Induction motor.

Unit - V

9. (a) Discuss tractive effort for propelling a train.
- (b) What type of transmission is required in electrical vehicles.
- OR
10. (a) What are the characteristics required for traction motor.
- (b) How electric vehicles are better than other conventional vehicles?
