

B.Tech IV Year I Semester (R15) Regular Examinations November/December 2018

UTILIZATION OF ELECTRICAL ENERGY

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) Define MHCP and MSCP.
 - (b) Define Lumen and uniform diffuse source.
 - (c) Define conduction with example.
 - (d) What are the defects in welding?
 - (e) What are the merits of steam engine?
 - (f) Why dc series motor is ideally used for traction purpose?
 - (g) Define the term coefficient of adhesion.
 - (h) Define acceleration and retardation.
 - (i) Define power factor and load factor.
 - (j) List out the peak and base load plants.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)**UNIT – I**

- 2 (a) What is the basic nature of light and state the laws of illumination?
(b) A filament lamp of 500 W is suspended at a height of 5 meters above working plane and gives uniform illumination over an area of 8 m diameter. Assuming efficiency of reflector as 60% and efficiency of lamp is 0.9 watt per candle power; determine the illumination on the working plane.

OR

- 3 Describe with a neat sketch the principle of electric discharge lamp. State the advantages and disadvantages of discharge lamps over the filament lamp and give their applications.

UNIT – II

- 4 (a) Give classification of various electric heating methods along with brief account of their working principle.
(b) Discuss the method of temperature control of resistance ovens.

OR

- 5 (a) Define the term 'welding' and enumerate the various welding processes.
(b) With necessary figures, explain the processes of carbon arc welding and metallic arc welding.

UNIT – III

- 6 Explain various methods of electric braking. State the conditions to be fulfilled for each method of braking.

OR

- 7 Describe series and parallel operation of series and shunt motors with unequal wheel diameters. Discuss how loads are shared in each case.

UNIT – IV

- 8 (a) How are traction systems classified and state the main requirements for an ideal traction system and name the different traction systems?
(b) What are the merits and demerits of D.C system of track electrification?

OR

- 9 (a) Explain clearly 'free running', 'coasting' and 'breaking' with reference to the electric traction systems.
(b) A train runs between two stations 1.6 km apart at an average speed of 36 km/h. If the maximum speed is limited to be 72 km/h, acceleration to 2.7 km/h/s, coasting retardation to 0.18 km/h/s and breaking retardation to 3.2 km/h/s, compute duration of acceleration, coasting and breaking periods. Assume a simplified speed time curve.

UNIT – V

- 10 Explain the general comparison of private plant and public supply in utilization of electrical energy.

OR

- 11 Explain the capitalization of losses and how the choice of voltage is taken in utilization for better efficiency of the system.