

(DEE 325)

B.Tech DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Third Year)

ELECTRICALS AND ELECTRONICS

Paper - V : Utilization of Electrical Power

Time : 3 Hours

Maximum Marks : 75

Answer question No.1 compulsory

(15 × 1 = 15)

Answer any ONE question from each unit

(4 × 15 = 60)

- 1) a) What is meant by load equalization?
- b) How to select motor capacity for continuous duty?
- c) Define regenerative braking.
- d) What is meant by heating and cooling of motors?
- e) What are the advantages of electrical braking?
- f) Define crest speed, and scheduled speed of an electric train.
- g) Derive expression for the tractive effort for a train on a level track.
- h) What is specific energy consumption?
- i) Expression for the specific energy output for a trapezoidal speed-time run of an electric train.
- j) What is skin effect?
- k) How can you control the temperature in resistance furnace?
- l) What are the various methods in resistance welding?
- m) Define i) luminous flux ii) illumination

- n) What is the relationship between the lux and foot candle?
- o) Define i) Mean spherical Candle power ii) Mean horizontal Candle power

UNIT - I

- 2) Explain about electric braking, plugging, rheostatic and regenerative braking applied to dc motors.

OR

- 3) Explain about general considerations in selecting motor power ratings and selection of motor capacity for continuous duty.

UNIT - II

- 4) a) Discuss the merits and demerits of the DC and to AC systems for the main and suburban line electrification of the railways.

- b) Explain regenerative braking with three phase induction motors.

OR

- 5) a) For a trapezoidal speed-time curve of a electric train, derive expression for maximum speed and distance between stops.

- b) Describe plugging. Rheostatic braking and regenerative braking are employed with DC series motor.

UNIT - III

- 6) a) With a neat sketch explain the construction and principle of indirect core type induction furnace.

- b) How can you control the temperature in resistance furnace?

OR

- 7) a) Describe various methods in resistance welding.

- b) Describe various methods in arc welding.

UNIT - IV

- 8) a) State the laws of illumination. Explain the laws with the help of suitable diagrams and derive an equation of the same.

- b) Define “lux” and deduce the relationship between the lux and foot candle.

OR

- 9) a) State and explain inverse square law of illumination.
- b) Define solid angle and plane and derive the relationship between the solid angle and plane angle.

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