

END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] MAY- JUNE 2016

Paper Code: ETEE-304

Subject: Utilization of Electrical Energy and Electronic Traction

Time: 3 Hours

Maximum Marks: 75

Note: Attempt any five questions including Q.No1 which is compulsory. Select one question from each unit.

- Q1
- (a) What are polar curves? (2)
 - (b) Which type of DC generator will you prefer for welding and why? (3)
 - (c) Define Faraday's law for electrolysis. (2)
 - (d) What are the different types of electric traction? (2)
 - (e) Distinguish between resistance and arc welding. (3)
 - (f) What are eddy current. How they vary with the frequency. (3)
 - (g) What is the principle of working of resistance? List the application of resistance. (3)
 - (h) What are negative boosters used in traction. (2)
 - (i) List the desirable properties of traction motors. (3)
 - (j) How the dielectric losses can be minimized. (2)

UNIT-I

- Q2
- (a) What is photometry? Discuss the comparison and measurement of candle powers. (5)
 - (b) An incandescent lamp has a filament of 0.0045 cm diameter and 90 cm length. It is required to construct another lamp of similar type of work at double the supply frequency and give half the candle power. Assuming that the new lamp operates at same brilliancy, determine its suitable dimensions for its filament. (7.5)
- Q3
- (a) Give the construction and working of sodium vapor lamp. (7.5)
 - (b) An office of 25m x 12m is illuminated by 40W incandescent lamp of lumen output 2700 lumens. The average illumination required at the work place is 200 lux. Calculate the number of lamps required to be fitted in the office. Assume utilization and depreciation factor are 0.65 and 1.25 respectively. (5)

UNIT-II

- Q4
- (a) Write a short note on Arc furnaces and electrodes used in it. (7)
 - (b) What are the advantages and demerits of eddy current heating? (5.5)
- Q5
- (a) What is the definition of welding? Explain the procedure of electric Arc Welding. (7.5)
 - (b) Compare between AC and DC welding. (5)

UNIT-III

- Q6
- (a) Explain the procedure of starting of induction motors. How the rotating mmf is produced. (5)
 - (b) What are different methods of speed control of induction motors above and below its base speed? Explain in detail. (7.5)

P.T.O.

• ETEE-304

P/2

[2]

- Q7 (a) Explain the methods of braking of induction motors. How the energy returned to the power supply during regeneration. (7.5)
(b) Explain how the traction motors can be operated in parallel. (5)

UNIT-IV

- Q8 (a) Give the constructional details, principle of operation of Rechargeable Alkaline batteries. (7.5)
(b) Compare and give applications of different types of materials used in batteries. (5)
- Q9 (a) Explain in Fuel cell and use of electric double layer capacitor (Super capacitor) as battery bank. (8.5)
(b) What are applications of electrolysis? (4)

ETEE-304
P2/2