

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER- V • EXAMINATION – WINTER 2016

Subject Code:150906**Date: 28/11/2016****Subject Name: Electric Power Utilization and Traction****Time: 10:30AM – 01:00PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) State speed control methods of DC Shunt motor and explain armature voltage control with suitable diagram. **07**
(b) Classify electric drives and state the factors affecting selection of drive. **07**
- Q.2** (a) What is electroplating? Explain factors governing electroplating. Write three applications of electroplating. **07**
(b) Explain in brief various methods of electrical braking used for induction motor. **07**
- OR**
- (b) Suggest suitable A.C./ D.C. drives for following applications. Give reasons for the same. 1. Crane 2. Belt conveyer 3. Rolling mills 4. Lathe **07**
- Q.3** (a) Explain design procedure of heating element with necessary expressions. **07**
(b) A train has scheduled speed of 30 kmph over level track between the stations 1km apart. Station stopping time is 20 sec. Assuming braking retardation of 3 kmphs and maximum speed 25% greater than average speed. Calculate the acceleration. **07**
- OR**
- Q.3** (a) Explain principle and working of vertical core type furnace with diagram. **07**
(b) State and explain square law of illumination. **07**
- Q.4** (a) Explain different types of resistance welding. **07**
(b) Describe various types of electric arc welding in detail. **07**
- OR**
- Q.4** (a) Find out section resistances r_1 , r_2 , r_3 , etc. Of the starter used for a D.C. Shunt motor from the following particulars:
supply voltage (V) = 220 V DC, KW = 25,
full load efficiency = 0.86, $r_m = 0.234$ ohm,
no. of studs = 8, Ratio of torque (max.) to torque (min) = 1.5. **07**
(b) State and explain Faraday's laws of electrolysis. **07**
- Q.5** (a) Discuss various factors to be considered while designing any lighting scheme. **07**
(b) Explain various faults occurs with reasons and remedial actions required to repair it. **07**
- OR**
- Q.5** (a) Explain the working of fluorescent tube with the help of circuit diagram **07**
(b) Explain the principle of operation of HPMV (High pressure mercury vapour) lamp giving its neat sketch. **07**
