

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**PDDC - SEMESTER-VIII • EXAMINATION – SUMMER • 2015**

**Subject Code: X 80903**

**Date: 15/05/2015**

**Subject Name: Electrical Drives & Traction**

**Time: 10:30 am - 01:00 pm**

**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) Discuss major factors affecting the selection of drives for different application. 07  
(b) Distinguish between group drive and individual drive. 07
- Q.2** (a) State and explain different types of motor enclosures. 07  
(b) A 250 Volt D.C. shunt motor with constant field excitation drives a load whose torque varies as the square of the speed. The armature current is 20A. When the motor is running at 500 rpm. Calculate the speed of the motor when running with a 25 ohm resistor connected series with the armature. Neglect motor losses. 07
- OR**
- (b) Explain the starting methods for synchronous motor. 07
- Q.3** (a) Explain plugging and regenerative braking. Also mention difference between them. 07  
(b) Write short notes on different class of duties of electrical motor. 07
- OR**
- Q.3** (a) Write short notes on energy efficient drives. 07  
(b) Explain different speed control methods of Induction motor. 07
- Q.4** (a) Draw and explain speed-time curve of different traction services. 07  
(b) Which types of speed-time characteristic required for suburban service and main line service. 07
- OR**
- Q.4** (a) Discuss advantages and disadvantages of electric traction 07  
(b) Draw and explain A.C. locomotive. 07
- Q.5** (a) Explain the following words related to electrical traction: 07  
(1) Dead weight (2) Accelerating weight (3) Adhesion weight  
(b) An electric locomotive exerts a tractive effort of 4000 kg on level track at a speed Of 50 km per hour. While going up an incline of 1 in 100, it has to exert a tractive effort of 5000 kg. Determine the H.P. of the motor if it has 07  
(1) D.C. series motor.  
(2) Induction motor.
- OR**
- Q.5** (a) Explain what are the different overhead equipments used for traction system. 07  
(b) What is specific energy consumption? Derive equation for specific energy consumption. 07

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