Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V- EXAMINATION – SUMMER 2016

Subject Code: 150906 **Date: 17/05/2016**

Subject Name: Electrical Power Utilization and Traction (Institute Elective - II)

Time: 02:30 PM to 05:00 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)**	Explain electric drives and its classification in detail.	**07**
	(b)	State the types of electric braking. Explain any one in detail.	**07**
Q.2	**(a)**	Explain speed control method for d.c.series motor with neat sketch.	**07**
	(b)	What do you understand by load equalization? Derive the expression for instantaneous motor torque, moment of inertia of the flywheel.	**07**
		OR	
	(b)	The resistance of the armature and shunt field winding of 440 V dc shunt motor are 0.3 Ω and 220 Ω respectively. At certain load, the motor draws the current of 70 A from the supply mains and runs at 900 rpm. If a resistance of 60Ω is connected in series with the field winding, find the speed of the motor. Assume torque to be constant and the magnetization curve to be linear.	**07**
Q.3	**(a)**	Define average speed, crest speed and schedule speed and discuss the factors which affect schedule speed of a train.	**07**
	(b)	What is co-efficient of adhesion? What are the factors affecting the co-efficient of adhesion?	**07**
		OR	
Q.3	**(a)**	Draw typical speed time curve for main line and derive expression for max speed using trapezoidal speed time curve.	**07**
	(b)	Compare AC and DC traction system.	**07**
Q.4	**(a)**	With a neat diagram, explain Ajax-Wyatt furnace. State advantages of it.	**07**
	(b)	What are the advantages of electric heating? Give classification of electric heating.	**07**
		OR	
Q.4	**(a)**	Describe various types of resistance welding processes.	**07**
	(b)	Discuss advantages of electric welding and give classification of electric welding.	**07**
Q.5	**(a)**	Compare incandescent lamp with gas discharge lamp.	**07**
	(b)	State laws of illumination and also derive the equation saying illumination at surface is inversely proportional to the square of the distance from the source.	**07**
		OR	
Q.5	**(a)**	Explain the terms used in electrolytic process (i) Current efficiency (ii) Energy efficiency. Also explain Faraday's laws of electrolysis.	**07**
	(b)	Discuss factors affecting in electro deposition.	**07**

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