Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII • EXAMINATION – WINTER • 2014

Subject Code: 180902 Date: 29-11-2014

Subject Name: Electrical Power Utilization

Time: 02:30 pm - 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)**	Give classification of electric drive and also discuss factors affecting choice of an electric drive?	**07**
	(b)	Discuss rheostatic braking applied to d.c motor with neat sketch	**07**
Q.2	**(a)**	State and explain advantages of electric traction system.	**07**
	(b)	Draw and explain a typical Speed-Time curve for an electric train and explain what do you understand by Crest speed, Average speed and Schedule speed.	**07**
		OR	
	(b)	The speed-time curve of a train consists of: Uniform acceleration of 6 km/h/s for 25 s. Free running of 10 minutes. Uniform deceleration of 6 km/h/s to stop the train. A stop of 5 minutes. Find the distance between the stations, the average and schedule speed.	**07**
Q.3	**(a)**	Discuss 25KV AC traction drive employing transformer with Tap changer.	**07**
	(b)	A train is required to run between two stations 2 km apart at an average speed of 40 kmph. The run is to make to simplified quadrilateral speed-time curve. If the maximum speed is to be limited to 60 kmph, acceleration to 2 kmphps and coasting and braking retardations to 0.15 kmphps and 3 kmphps respectively, determine the duration of acceleration, coasting and braking periods.	**07**
		OR	
Q.3	**(a)**	Deduce the expression for : (i) The tractive effort transferred to the driving wheel in terms of wheel diameter, motor torque, gear ratio and efficiency of transmission. (ii) The tractive effort for propulsion of train up and down the gradient.	**07**
	(b)	State and explain faraday's law of electrolysis. Also state its applications.	**07**
Q.4	**(a)**	Explain indirect type arc furnace with neat sketch	**07**
	(b)	State and explain square law of illumination	**07**
		OR	
Q.4	**(a)**	Discuss advantages of electric welding and give classification of electric welding.	**07**
	(b)	Give short notes on energy storage welding process.	**07**
Q.5	**(a)**	State and explain advantages of electric heating.	**07**
	(b)	Explain principle of dielectric heating. Also state advantages and disadvantages with applications.	**07**
		OR	
Q.5	**(a)**	Classify various types of electric heating methods. Explain any one in detail	**07**
	(b)	Define following terms with respect to illumination :(1) Lux (2) MHCP(3) lamp efficiency(4)solid angle.	**07**

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