Reg. No.



VII SEMESTER B.TECH (ELECTRICAL & ELECTRONICS ENGINEERING)

END SEMESTER EXAMINATIONS NOV/DEC 2016

SUBJECT: UTILIZATION OF ELECTRICAL ENERGY [ELE 435]

REVISED CREDIT SYSTEM

Time:	3 Hours	Date:	30 November 2016	MAX. MARKS: 50
Instru	ctions to Candidates:			
	 Answer ANY FIVE FULL qu 	lestions.		
	 Missing data may be suitab 	ole assun	ned.	
1A.	Mention the different system Electric traction.	s of tra	ction, list out the advantages and disa	dvantages of (03)
1B.	Mention the different systems railway electrification from the	of track e point o	electrification, compare between DC & A f view of suburban line railway service.	AC systems of (04)
1C.	With the help of the figure, trapezoidal speed time curve.	derive a	an expression for maximum speed of t	raction using (03)
2A.	Define the following			
	a. Crest Speed b. Av	verage Sp	peed c. Scheduled Speed.	(03)
2B.	Find the speed of an electric to speed is 1.25. It has a braking stop time of 21 second. Assume	rain for a g retarda e trapezo	a run of 1.5 km if the ratio of its maximu ation of 3.6 km /h/s, acceleration of 1.8 oidal speed time curve.	m to average km/h/s and (04)
2C.	Derive an expression for prop traction system.	oulsion c	of train and power output from the driv	ing axles of a (03)
3A.	A 250 tonne motor coach hav acceleration, starting from rest efficiency 90%, wheel diamete effect 10%, compute the time voltage is 3000 V and moto acceleration period.	ring 4 m t. If up gr er 90 cm e taken l or effici-	notors, each developing a torque of 8000 radient is 30 in 1000, gear ratio 3.5, gear a, train resistance 50 newton/tonne, rota by the coach to attain a speed of 80 km ency 85%, calculate the current taken) N-m during transmission ational inertia /hr. If supply n during the (04)
3B.	Explain the factors affecting electric train.	energy o	consumption and specific energy consu	mption of an (03)
3C.	An electric train has an average apart. It is accelerated at 1.7 resistance as 50 N/tonne, allow Estimate the i) Specific energy	ge speed km /hr wing 109 gy consu	d of 42 km/hr on a level track between /s and is braked at 3.3 km /hr/s . Assu % for rotational inertia, and efficiency of mption ii) Draw the speed time curve.	stops 1.4 km ming tractive motors 85% . (03)
4A.	With a neat diagrams, explain traction system.	the start	ting and speed control of single phase se	ies motors in (03)
4B.	Explain the regenerative brak characteristic.	ing syste	em in Induction motor with the help of	Torque –Slip (03)

4C.	With a neat diagram explain the following:				
	a. The compressed air brakes b. The vacuum brakes	(04)			
5A.	Describe the different types of current collectors for overhead system in electrical traction with a neat figure.				
5B.	With a neat diagram explain the working of negative booster in DC traction system to avoid the interference with communication lines.				
5C.	Describe the following process in electrolysis				
	a. Electro deposition b. Electro forming c. Electro typing.	(03)			
6A.	With a neat figure, explain the working of direct core type Induction furnace, mention its draw backs.				
6B.	Explain the principle of dielectric heating with a neat figure and phasor. Mention its advantages.				
6C.	Mention the different resistance electric welding processes, explain the flash welding process with neat figure.	(04)			