Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – WINTER • 2014

Subject Code: 152405 **Date: 08-12-2014**

Subject Name: Power Electronics Applications

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)**	Draw the block diagram of power electronics system &explain functionality & working of each in detail.	**07**
	(b)	Do as directed: 1.Draw the detail block diagram indicating all parts of electric motor drive. 2. Enlist the function of power electronics modulator in drive system. 3. List the advantage &disadvantages of electrical drive.	**07**
Q.2	**(a)**	What is thyrister! Explain its construction, operating principle & v-I charact. Of S.C.R.	**07**
	(b)	Draw symbols &v-I charact. Of 1.power diode 2.D.I.A.C.3.POWER B.J.T.4.U.J.T.5.TRAC 6.POWER MOSFET 7.I.G.B.T.	**07**
		OR	
	(b)	Discuss charact. Of ideal switch &explain each in detail.	**07**
Q.3	**(a)**	Define commutation. Describe thyrister turn off mechanism in detail. List the method of commutation.	**07**
	(b)	What is inverter! Explain classification of inverter in details. List the requirement of practical inverter.	**07**
		OR	
Q.3	**(a)**	Define turn on time. Describe thyrister turn on mechanism in detail. List the method of triggering.	**07**
	(b)	Explain classification of chopper. Explain working of step down chopper using circuit diagram &neat waveform.	**07**
Q.4	**(a)**	Define s.m.p.s. Explain the classification of it & also, explain working of s.m.p.s with necessary block diagram.	**07**
	(b)	Define u.p.s. Explain the classification of it & also, explain working of u.p.s. with necessary block diagram.	**07**
		OR	
Q.4	**(a)**	Compare the following terms: 1.induction &dielectric heating.2.Conventional &load proportional capacity modulated heat pump.	**07**
	(b)	Compare the following terms: 1.AC & DC motor drive 2.Electroplating & electroforming.	**07**
Q.5	**(a)**	Explain the working, advantages, disadvantages & application of electronic ballast using block diagram.	**07**
	(b)	Explain the configuration of H.V.D.C. transmission along with its advantages,disadvantages & application.	**07**
		OR	
Q.5	**(a)**	Define electrical welding. Explain the working, advantages, disadvantages & application of switched mode arc welder using block diagram.	**07**
	(b)	Explain the utilization of non conventional energy sources in power generation using power electronics with necessary diagram.	**07**

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