Seat No.:	Enrolment No.
Jeal 110	Linoinent 110.

GUJARAT TECHNOLOGICAL UNIVERSITY BE- Vth SEMESTER-EXAMINATION - MAY/JUNE - 2012 Be- 152401 Date: 01

Subject code: 152401 Date: 0		ode: 152401 Date: 01/06/201)1/06/2012	
		ame: Power Electronics Devices & Instruments		
		30 pm – 05:00 pm Total Marks: 7	70	
Instr				
		mpt all questions.		
2.		te suitable assumptions wherever necessary.		
3.	_	res to the right indicate full marks.		
4. Q.1	Nota (a)	tions/ symbols used have usual meanings. Compare Power BJT with Thyristor for various aspects in tabular form.	07	
Q.1	(a) (b)	In which mode TRIAC will be most sensitive? Discuss the same.	04	
	(c)	"Si is preferred over Ge to fabricate a thyristor". Justify the above statement.	03	
Q.2	(a)	Define commutation. Explain Class F commutation method for a thyristor.	07	
_	(b)	Derive an equation for oscillating frequency for an UJT relaxation oscillator. OR	07	
	(b)	Define power switch. Describe the following w.r.t. a switch: SOA, Losses in a practical switch.	07	
Q.3	(a)	Describe reverse recovery characteristics of a diode with necessary diagram(s).	07	
	(b)	Discuss the switching performance of a Power BJT with relevant waveforms. OR	07	
Q.3	(a) (b)	Describe the principle of operation of a Schottky diode. State its applications. Draw the symbol and V-I Characteristics of the following:	07 07	
		i) LASCR ii) GTO iii) UJT iv) PUT v) TRIAC vi) SCR vii) DIAC		
Q.4	(a)	Write short note on:- (i) Pin diode (ii) Parama IC	07	
	(b)	(ii) Power IC. Explain various mounting techniques for thyristor in detail. OR	07	
Q.4	(a) (b)	Sketch symbol and equivalent circuit of an IGBT. Describe its operation. Enlist factors responsible for un-reliable operation of a thyristor. Discuss remedies for any two of them.		
Q.5	(a)	State merits of Power MOSFET. Also, discuss parallel operation of two Power MOSFETs.	07	
	(b)	Draw and explain two transistor model of an SCR with necessary diagrams. OR	07	
Q.5	(a)	Write notes on :- (i) SITH (ii) RCT.		
	(b)	Describe Turn-on mechanism for a Thyristor with necessary waveforms. ***********************************	07	