Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(NEW) • EXAMINATION – WINTER 2016

Subject Code:2172410 **Date:29/11/2016**

Subject Name:Power Electronics Design

Time:10.30 AM to 1.00 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 any one non-isolated driver circuit for SCR with design consideration.	**07**
	(b)	Define Design and Enlist and Explain steps of Engineering Design process.	**07**
Q.2	**(a)**	Explain considerations for Engineering Design with respect to Power Electronics.	**07**
	(b)	Explain Baker's clamp circuit with diagram and also discuss requirement of it in base driver circuit of Power transistor.	**07**
		OR	
	(b)	What is the base drive requirement for power transistor switch? Explain any one driver circuit without isolation with design consideration.	**07**
Q.3	**(a)**	Why Isolation is required in driver circuit of Power device? Explain any one Isolated driver circuit for Power Electronics device with design consideration.	**07**
	(b)	Write a technical note on di/dt and dv/dt protection.	**07**
		OR	
Q.3	**(a)**	Write a technical note on Thermal protection.	**07**
	(b)	Explain Floating ground considerations for Isolated driver circuits.	**07**
Q.4	**(a)**	Write a brief note on Design of Line frequency Inductor.	**07**
	(b)	Enlist and explain the steps to design a transformer for high frequency power converters.	**07**
		OR	
Q.4	**(a)**	Explain design of Inductor for Power Converter.	**07**
	(b)	Describe the methods adopted for suppressing over voltages in thyrister.	**07**
Q.5	**(a)**	Write a brief note on PCB designing	**07**
	(b)	Give the concept of thermal resistance. Describe the analogy between thermal and Electrical quantities.	**07**
		OR	
Q.5	**(a)**	Discuss the design aspects and component selection for Snubber circuit.	**07**
	(b)	The trigger circuit of a thyristor has a source voltage of 15V and the load line has a slope of -120V per ampere, The minimum gate current to turn on the SCR is 25 mA. Compute (a) Source resistance required in the gate circuit.(b)the trigger voltage and trigger current for an average gate power dissipation of 0.4 watts.	**07**

****