Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2020

Subject Code:2172410 **Date:28/01/2021**

Subject Name:Power Electronics Design

Time:10:30 AM TO 12:30 PM **Total Marks: 56**

Instructions:

1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	Draw the structure & explain the working principle of Power BJT.	**03**
	(b)	Enlist steps to design power electronics circuit.	**04**
	(c)	Explain any one non-isolated driver circuit for SCR with design consideration.	**07**
Q.2	**(a)**	Enlist & explain steps for Inductor design.	**03**
	(b)	Discuss the design aspects and component selection for Snubber Circuit.	**04**
	(c)	Discuss the effect of poor grounding for driver circuits.	**07**
Q.3	**(a)**	Enlist the requirement of isolated driver circuit.	**03**
	(b)	Write a technical note on di/dt and dv/dt protection of SCR.	**04**
	(c)	Describe the steps involving in high frequency inductor design for boost converter.	**07**
Q.4	**(a)**	Enlist the importance of isolated driver circuit.	**03**
	(b)	Write a technical note on over current protection	**04**
	(c)	Discuss the method to design high frequency transformer for Flyback type DC-DC converter.	**07**
Q.5	**(a)**	Write a note on: opto-coupler.	**03**
	(b)	Draw any one isolated driver circuit for MOSFET.	**04**
	(c)	Discuss a method to measure analog quantity like voltage, current & frequency.	**07**
Q.6	**(a)**	Discuss working of pulse transformer in brief.	**03**
	(b)	Draw any one isolated driver circuit for IGBT.	**04**
	(c)	Design non-isolated type driver circuit for TRIAC. Support your answer with suitable diagrams.	**07**
Q.7	**(a)**	Define Heat Sink. List the types of Heat Sink according to heat Dissipation method.	**03**
	(b)	Enlist & explain types of PCBs.	**04**
	(c)	Write a short note on PCB design for mixed signal (analog and digital) circuit	**07**
Q.8	**(a)**	Compare the Active and Passive Heat Sink.	**03**
	(b)	Explain the Noise Reduction Through PCB Layout.	**04**
	(c)	Write a short note on design considerations for Voltage Isolation and Current Capacity for PCB design.	**07**

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