GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3172413   **Date:05-01-2023**

Subject Name:Advanced Power Electronics Devices and Interface Circuits

Time:10:30 AM TO 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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Explain concept of Wide Band Gap (WBG) power semiconductor devices.	**03**
	(b)	Give the comparison of WBG (SiC, GaN) and Si devices.	**04**
	(c)	Explain any half bridge driver IC.	**07**
Q.2	**(a)**	Discuss grounding considerations for driver circuits.	**03**
	(b)	Discuss requirement & importance of isolation.	**04**
	(c)	Explain any half bridge driver IC with SC Protection.	**07**
		OR	
	(c)	Explain single switch driver IC in detail. (e.g., TLP250)	**07**
Q.3	**(a)**	Explain galvanic isolation.	**03**
	(b)	Explain importance of various protection.	**04**
	(c)	Write short note on hall effect current sensor.	**07**
		OR	
Q.3	**(a)**	Discuss current transformer.	**03**
	(b)	Explain force to voltage converter.	**04**
	(c)	Explain SCR driver IC (MOC3002) in detail.	**07**
Q.4	**(a)**	List out applications of Logic Analyzer.	**03**
	(b)	Discuss thermal resistance & its Consideration.	**04**
	(c)	Draw and explain block diagram of oscilloscope.	**07**
		OR	
Q.4	**(a)**	List our various cooing methods.	**03**
	(b)	Explain forced and natural cooing of heat sinks.	**04**
	(c)	Explain heat sink calculations and design in detail.	**07**
Q.5	**(a)**	Explain linear opto-coupler.	**03**
	(b)	Discuss transformer design for driver circuits.	**04**
	(c)	Describe general steps to inductor design for power converters.	**07**
		OR	
Q.5	**(a)**	Discuss considering of grounding for Power Circuits.	**03**
	(b)	Explain the use of differential voltage probe.	**04**
	(c)	Explain transformer design for "Forward Converter" in detail.	**07**

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