Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019

Subject Code: 2172408 **Date: 28/11/2019**

Subject Name: Advanced Power Electronics Devices & 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.**

			MARKS
Q.1	**(a)**	State applications of WBG materials.	**03**
	(b)	Why do semiconductors have a band gap?	**04**
	(c)	Compare WBG (Sic or GaN) with Silicon based power electronics.	**07**
Q.2	**(a)**	State different methods of galvanic isolation.	**03**
	(b)	State functions of driver circuits.	**04**
	(c)	Explain the any Non-Isolated Driver ICs used for Half Bridge Rectifier.	**07**
		OR	
	(c)	Explain the Hall Effect Current Sensors & Linear Opto coupler.	**07**
Q.3	**(a)**	State various principles used in transducers used for current measurement in industry.	**03**
	(b)	Enlist isolated and non-isolated driver ICs.	**04**
	(c)	Explain the Interfacing of Signals Using Galvanic Isolation.	**07**
		OR	
Q.3	**(a)**	Discuss Gate Drive Requirements Of High-Side Devices.	**03**
	(b)	Write short note on Current Transformer.	**04**
	(c)	Explain why isolation of field signal is required? Explain any one method of isolating field signals with neat diagram.	**07**
Q.4	**(a)**	Draw Analog to Digital converter circuit.	**03**
	(b)	State various logic families.	**04**
	(c)	Explain how a TTL IC can be interfaced with CMOS IC. Draw interconnection diagrams also.	**07**
		OR	
Q.4	**(a)**	Draw any one scheme for interfacing slow field signal with microprocessor.	**03**
	(b)	What is logic analyzer? State its applications.	**04**
	(c)	Write technical note on current probe for power electronics.	**07**
Q.5	**(a)**	What is meaning of VOH and VOL voltage levels of logic ICs.	**03**
	(b)	Write short note on Grounding for Power Circuits.	**04**
	(c)	Explain single switch driver IC without SC protection.	**07**
		OR	
Q.5	**(a)**	Explain requirement of Isolation Amplifier.	**03**
	(b)	Compare CRO with DSO.	**04**
	(c)	Write technical note on differential voltage probe.	**07**

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