Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:2172408 Date:25/01/2021

Subject Name:Advanced Power Electronics Devices & Interface Circuits

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)**	Why do semiconductors have a band gap?	**03**
	(b)	State working principle of Frequency & Speed Measurement.	**04**
	(c)	Draw and explain Analog to Digital converter circuit.	**07**
Q.2	**(a)**	Write a short note on use of Power Scope for power electronics applications.	**03**
	(b)	Write short note on Grounding for Power Circuits.	**04**
	(c)	Write the Merits and Demerits of Wide Bang Gap Power Semiconductor Devices.	**07**
Q.3	**(a)**	State different methods of protecting power switch against over load. Explain any one with neat diagram.	**03**
	(b)	Enlist isolated and non-isolated driver ICs.	**04**
	(c)	Explain Hall effect current sensors in detail.	**07**
Q.4	**(a)**	Write full form of MOSFET. Discuss need of MOSFET driver?	**03**
	(b)	State various principles used in transducers used for current measurement in industry.	**04**
	(c)	Explain with neat diagram, Single Switch Driver IC (e.g. HCPL316J) with SC Protection.	**07**
Q.5	**(a)**	What is meaning of V_{OH} and V_{OL} voltage levels of logic ICs.	**03**
	(b)	Explain any DC Current measurement technique.	**04**
	(c)	Explain the Interfacing of Digital Signals with Different Voltage Levels.	**07**
Q.6	**(a)**	Write full form of TTL and CMOS. Explain how a TTL IC can be interfaced with CMOS IC.	**03**
	(b)	Explain the Signal Conditioning.	**04**
	(c)	Explain application of Linear Opto-coupler.	**07**
Q.7	**(a)**	Write a full form of CRO and DSO. Compare CRO with DSO.	**03**
	(b)	Draw block diagram of CRO.	**04**
	(c)	Explain the F to V Converter in detail.	**07**
Q.8	**(a)**	State various wide band gap materials and their energy band gap.	**03**
	(b)	Draw Analog to Digital converter circuit.	**04**
	(c)	Explain the Differential Voltage Probe & Current Probe.	**07**

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