Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- VII EXAMINATION-SUMMER 2023

Subject Code: 2172408 Date: 30/06/2023

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Draw the construction and static characteristics of SCR.	**03**
	(b)	State applications of WBG materials.	**04**
	(c)	Explain advantages of wide band gap semiconductor material w.r.t semiconductor materials Si, Ge.	**07**
Q.2	**(a)**	Discuss role of driver circuits in power electronics devices?	**03**
	(b)	Enlist isolated and non-isolated driver ICs.	**04**
	(c)	Explain the any Isolated Driver IC used for TRIAC.	**07**
		OR	
	(c)	Discuss the Hall Effect Current Sensors.	**07**
Q.3	**(a)**	What is the purpose of using isolation amplifier? State the design methods of isolation amplifier	**03**
	(b)	Write short note on Current Transformer	**04**
	(c)	Explain important of galvanic isolation. Explain any one method of isolating field signals with neat diagram.	**07**
		OR	
Q.3	**(a)**	Discuss the Linear opto coupler IL300.	**03**
	(b)	State various principles used in transducers used for current measurement in industry.	**04**
	(c)	Explain F to V Converter with neat diagram.	**07**
Q.4	**(a)**	What is logic analyzer? State its applications.	**03**
	(b)	What is meaning of VIH and VIL voltage levels of logic ICs.	**04**
	(c)	Explain the measurement & interfacing of analog signals with Digital System.	**07**
		OR	
Q.4	**(a)**	State different methods of digitizing analog signals.	**03**
	(b)	Discuss Gate Drive Requirements Of High-Side Devices.	**04**
	(c)	Explain Voltage Measurement using Discrete Components.	**07**
Q.5	**(a)**	Draw Analog to Digital converter circuit.	**03**
	(b)	Explain the Principle of Frequency Measurement.	**04**
	(c)	Write technical note on differential voltage probe.	**07**
		OR	
Q.5	**(a)**	Draw block diagram of CRO.	**03**
	(b)	Write short note on Grounding for Power Circuits.	**04**
	(c)	Compare CRO with DSO in tabular form.	**07**

****