Seat No.: _____   Enrolment No._____

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

Subject Code:2172408   **Date:07-01-2023**
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)	What are the advantages of Wide band gap materials?	03
	(b)	What is Band Gap? Explain with reference to semiconducting material.	04
	(c)	Write a short note on Half Bridge driver IC IR2110.	07
Q.2	(a)	What is function of driver circuit? Explain.	03
	(b)	Write in brief about Grounding considerations in Power circuit.	04
	(c)	Write a short note on TTL to CMOS interfacing.	07
		OR	
	(c)	Draw and explain Analog to Digital converter circuit.	07
Q.3	(a)	Why isolated driver circuit is required for Power switch?	03
	(b)	Explain the function of Short circuit protection for power switch.	04
	(c)	Explain isolated TRIAC driver IC in detail.	07
		OR	
Q.3	(a)	Explain the need of current transformer.	03
	(b)	Draw a basic block diagram of Cathode ray oscilloscope.	04
	(c)	Explain signal conditioning with appropriate example.	07
Q.4	(a)	What is basic principle of Hall effect sensor? Explain.	03
	(b)	Explain, how common mode signal can be removed?	04
	(c)	Explain working principle of Differential voltage probe.	07
		OR	
Q.4	(a)	Explain term "Galvanic Isolation".	03
	(b)	Explain the meaning of V_{OH} and V_{OL} voltage levels of Digital logic.	04
	(c)	Write a short note on Frequency to Voltage converter.	07
Q.5	(a)	What is current sinking in IC? Explain.	03
	(b)	What is logic analyzer? State its applications.	04
	(c)	Explain about Single Switch Driver IC with SC Protection.	07
		OR	
Q.5	(a)	Draw internal diagram of Linear Optocoupler IL300.	03
	(b)	Explain the need of Power Scope in measurement.	04
	(c)	Write a short note on Silicon Control Rectifier (SCR) driver IC MOC3002.	07

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