

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2021****Subject Code:2172408****Date:05/08/2021****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.

		<b>MARKS</b>
<b>Q.1</b>	(a) State various wide band gap materials and their energy band gap.	<b>03</b>
	(b) State applications of WBG devices.	<b>04</b>
	(c) Compare SiC with Si technology for power devices. State the main advantages of Si over SiC devices, looking to the current developing stage of SiC devices.	<b>07</b>
<b>Q.2</b>	(a) Explain the requirement and importance of SC protection in driver circuit.	<b>03</b>
	(b) Explain gate drive requirements of High-Side devices.	<b>04</b>
	(c) Explain any one isolated driver IC for a single switch.	<b>07</b>
	<b>OR</b>	
	(c) Explain relay driver IC ULN2803.	<b>07</b>
<b>Q.3</b>	(a) Explain the principle of frequency measurement.	<b>03</b>
	(b) Explain in brief voltage measurement using R and C.	<b>04</b>
	(c) Discuss requirement and importance of galvanic isolation for interfacing of signals.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Explain the working principle of hall effect current sensors.	<b>03</b>
	(b) State and explain the application of linear opto-coupler.	<b>04</b>
	(c) Explain F to V converter.	<b>07</b>
<b>Q.4</b>	(a) What is meaning of VOH and VOL voltage levels of logic ICs?	<b>03</b>
	(b) Explain the Signal Conditioning.	<b>04</b>
	(c) Write technical note on differential voltage probe.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) While using a current probe with DSO is there a physical contact required between the terminal of current probe and the measuring circuit? On which principle does current probe work?	<b>03</b>
	(b) Explain grounding in power circuits.	<b>04</b>
	(c) Explain Power Scope.	<b>07</b>
<b>Q.5</b>	(a) Explain why isolation of field signal is required?	<b>03</b>
	(b) Explain the requirement and advantages of isolated channel DSO.	<b>04</b>
	(c) Compare Digital Signal Oscilloscope with Logic Analyser.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Draw the circuit to control fan speed using MOC3002.	<b>03</b>
	(b) Compare CRO with DSO.	<b>04</b>
	(c) Explain the Interfacing of Digital Signals with Different Voltage Levels.	<b>07</b>

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