

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VII (NEW) EXAMINATION – WINTER 2021****Subject Code:2172408****Date:29/11/2021****Subject Name:Advanced Power Electronics Devices & Interface Circuits****Time:02:30 PM TO 05:00 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.

- Q.1** (a) Explain the concept of WBG. **03**
 (b) What are the properties of WBG semiconductors? Enlist the application areas of WBG. **04**
 (c) Explain isolated TRIAC driver IC in detail. **07**
- Q.2** (a) Explain utilization of CRO for Power Electronics applications. **03**
 (b) Explain utilization of Logic Analyzer and Power Scope for Power Electronics applications. **04**
 (c) Explain TTL to CMOS interfacing. **07**
- OR**
- (c) Compare WBG (Sic or GaN) with Silicon based power electronic devices. **07**
- Q.3** (a) Discuss Current Probe. **03**
 (b) Define Power Dissipation, Propagation Delay, drive capabilities, fan-out and fan-in. **04**
 (c) Draw and explain Analog to Digital converter circuit. **07**
- OR**
- Q.3** (a) Discuss Differential Voltage Probe. **03**
 (b) Explain single switch driver IC without SC protection. **04**
 (c) Explain signal conditioning. **07**
- Q.4** (a) What do you mean by Galvanic Isolation? Enumerate its importance. **03**
 (b) Discuss single switch driver with SC protection. **04**
 (c) Explain Half bridge driver IC without SC protection. **07**
- OR**
- Q.4** (a) Explain F to V converter. **03**
 (b) Discuss Hall effect current sensors. **04**
 (c) Explain voltage measurement using discrete components. **07**
- Q.5** (a) Explain the basics of current sourcing when using TTL ICs. **03**
 (b) Explain the basics of current sinking when using TTL ICs. **04**
 (c) Explain TTL to CMOS interfacing. **07**
- OR**
- Q.5** (a) Explain Linear Opto-coupler. **03**
 (b) Discuss Principle of Frequency & Speed Measurement. **04**
 (c) Explain the isolated Gate/Base driver ICs with protection. **07**
