

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2022****Subject Code:3172413****Date:03/06/2022****Subject Name:Advanced Power Electronics Devices and 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) Write the Merits and Demerits of WBG Devices. **03**
 (b) Explain the Galvanic Isolation & its importance. **04**
 (c) Compare SiC devices with Si devices in tabular form. **07**
- Q.2** (a) Give the comparison between MOSFET and IGBT. **03**
 (b) Explain the isolated gate driver ICs with protection. **04**
 (c) Which are the properties of WBG semiconductors and Enlist application areas of WBG semiconductor devices? **07**
- OR**
- (c) Write a short note on Hall effect current sensor. **07**
- Q.3** (a) Explain in brief the use of logic analyzer. **03**
 (b) Explain requirement of Single Switch Driver IC with SC Protection (e.g. MC33153). **04**
 (c) Explain F to V conversion using LM331. **07**
- OR**
- Q.3** (a) State working principle of Frequency & Speed Measurement. **03**
 (b) Discuss Voltage Measurement using LEM LV 25-P. **04**
 (c) Explain the steps for transformer design of flyback converter. **07**
- Q.4** (a) Discuss TRIAC driver IC. **03**
 (b) Write short note on Measuring and Interfacing Analog Signals. **04**
 (c) Write a note on isolation amplifier. **07**
- OR**
- Q.4** (a) Draw the pin diagram of IR2110 and explain briefly its pins. **03**
 (b) Write short note on Current Transformer. **04**
 (c) Write short note on use of Power Scope for power electronics applications. **07**
- Q.5** (a) Discuss thermal resistance in brief. **03**
 (b) What is the the reason of keeping air-gap in high frequency inductors. **04**
 (c) Explain the differential Voltage Probe & Current Probe. **07**
- OR**
- Q.5** (a) Draw block diagram of CRO. **03**
 (b) Discuss floating ground in power converters. **04**
 (c) Discuss steps of heat sink design and calculation for SCR. **07**
