

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3172416

Date:30-11-2024

Subject Name: Digital Signal Controllers

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.

- Q.1** (a) Explain difference between Digital signal controllers (DSC) and Digital signal processors (DSP). **03**
- (b) What are the Signal processing requirements for Power Electronics System? **04**
- (c) Explain main features of C2000 Real Time Microcontroller. Compare DELFINO and PICOLO family of Microcontrollers. **07**
- Q.2** (a) Define Processing Capacity. Enlist subfamilies of DSC. **03**
- (b) Explain the following terms:- (i) Macros (ii) Linker **04**
- (c) Explain Sampling and Reconstruction of Signal in Frequency Domain. **07**
- OR**
- (c) Justify the statement “Digital Signal Processing is must for Power Electronics Systems”. **07**
- Q.3** (a) Explain data file format in Code Composer Studio. **03**
- (b) Describe utility of Assembler in Software development tool. **04**
- (c) Discuss CPU Timers of DSC 2833X Series Controller in detail. **07**
- OR**
- Q.3** (a) Discuss utility of Object Modules in Software development tool. **03**
- (b) Explain how memory content can be viewed using IDE of TI. **04**
- (c) Draw and explain the GPIO - Input Timing. **07**
- Q.4** (a) State different types of C2000 instructions. **03**
- (b) What are different facilities in IDE in Q4(a) above? **04**
- (c) Discuss w.r.t CCS (i) Watch window and (ii) Project environment. **07**
- OR**
- Q.4** (a) Explain basic features available in Code composer studio. **03**
- (b) Discuss utility of Break points and Probe points in Code composer studio. **04**
- (c) Explain the Code composer studio as integrated development environment. **07**
- Q.5** (a) Draw block diagram of ADC module in TI28335. **03**
- (b) Explain Serial Peripheral Interface (SPI) Module of DSC 2833X series controller in brief. **04**
- (c) Explain about Various Peripherals of TMS320F28335 in brief. **07**
- OR**
- Q.5** (a) Explain Memory Map of TMS320F28335. **03**
- (b) Write a suitable program for Timer interrupt for a controller. **04**
- (c) Discuss the functional overview of TMS320F28X controller. **07**
