Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2023

Subject Code:3172416 Date:08-12-2023

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)**	Discuss utility of digital signal controller in power electronics field.	**03**
	(b)	Why one prefer to use DSC in Power supply design?	**04**
	(c)	Enlist subfamilies of DSC.	**07**
Q.2	**(a)**	Differentiate digital signal controllers and digital signal processors in all aspects.	**03**
	(b)	Compare PICOLO and DELFINO Microcontrollers for various aspects in tabular form.	**04**
	(c)	Explain sampling and reconstruction of signal in frequency domain.	**07**
		OR	
	(c)	Explain the basic architecture of a digital signal processor.	**07**
Q.3	**(a)**	Explain in brief about object module.	**03**
	(b)	Discuss macro language description of TMS320C28x in details.	**04**
	(c)	Write a suitable program for PWM generation for a controller.	**07**
		OR	
Q.3	**(a)**	Discuss about data file format in code composer studio(CCS).	**03**
	(b)	Discuss utility of Break points and Probe points in CCS.	**04**
	(c)	Write a suitable program for timer interrupt for a controller.	**07**
Q.4	**(a)**	Enlist various register maps of DSC 2833X series controller.	**03**
	(b)	Differentiate RAM & ROM. Explain in details Flash memory.	**04**
	(c)	Draw and explain the GPIO-Input Timing.	**07**
		OR	
Q.4	**(a)**	Enlist various peripherals of DSC 2833X series controller.	**03**
	(b)	Define and explain about Assembler directives .	**04**
	(c)	Explain enhanced Analog-to-Digital Converter (ADC) Module of DSC 2833X series controller in detail.	**07**
Q.5	**(a)**	Explain in brief Multiprocessing with CCS.	**03**
	(b)	Discuss Project environment w.r.t. CCS.	**04**
	(c)	Explain code composer studio (CCS) as an Integrated development Environment.	**07**
		OR	
Q.5	**(a)**	Explain in brief Linker & Macros.	**03**
	(b)	Discuss memory map & watch window w.r.t. CCS project environment.	**04**
	(c)	Discuss the functional overview of TMS320F28X controller.	**07**

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