

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2013****Subject code: 1722603****Date: 03-06-2013****Subject Name: DSP Architecture and Programming****Time: 10.30 am – 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.

- Q.1** (a) Explain in detail how VelociTI architecture of the C6000 platform achieves high performance. **07**
- (b) List the variety of memory and peripheral options are available for the C6000 Platform and explain their significance. **07**
- Q.2** (a) Explain following TMS320C67x processor instructions with an example. **07**
(i) INTSP (ii) LDW (iii) NORM
- (b) Explain in detail single precision floating point data representation. Convert following data format into single precision floating point data. **07**
(i) $(-999.6)_{10}$ (ii) $(452.12)_7$
- OR**
- (b) Explain various addressing modes of TMS320C67x processor with examples. **07**
Write short code to initialize C67x processor for circular addressing mode with buffer size 8 KB using size field-0 and register A5.
- Q.3** (a) Explain resource constraints on Long (40-Bit) Data in detail. **07**
- (b) Discuss the importance of parallel operations and conditional operations in programming with example. **07**
- OR**
- Q.3** (a) What do you mean by pipelining? Explain in detail with each stage. **07**
- (b) List and explain in brief with examples, different ways of invoking assembly language in C-code. **07**
- Q.4** (a) Write an assembly language program using C67x processor to find numbers of negative data among randomly stored Ten half-words from memory location 2000H onwards. Store result to location 3000H. **07**
- (b) Write a C program that calls an assembly function to calculate the following: **07**
 $y = \sum_{x=1}^7 3x!$, where $x = 1$ to 7 .
- OR**
- Q.4** (a) Write an assembly language program using C67x processor to maximum number among randomly stored Ten words from memory location 500H onwards. Store result to location 200H. **07**
- (b) Write an assembly language program using C67x processor that calls an assembly function to convert little-endian data format to big-endian data format for FIVE words stored at memory location 5000H onwards. Store result to location 6000H onwards **07**
- Q.5** (a) List McBSP supported functions and explain them in brief. **07**
- (b) Write short note on DSP system design Using FPGA. **07**
- OR**
- Q.5** (a) Explain in detail, 1-Dimensional Transfer Data Frame of EDMA. **07**
- (b) Write short note on code optimization. **07**
