

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER- II EXAMINATION – SUMMER 2015

Subject Code:2725402**Date: 01 /06 /2015****Subject Name: DIGITAL SIGNAL PROCESSORS: ARCHITECTURE AND PROGRAMMING****Time:2:30 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.

- Q.1 (a)** What is the use of host port in P-DSPs? How do they differ from comm ports? **07**
 List the relative merits and Demerits of RISC & CISC Processors.
- (b)** Briefly discuss how floating point addition and multiplication are performed? **07**
 Perform binary multiplication of following in Q.3 Format:
 (1) - 0.5×0.875 (2) - 0.375×-0.625 .
 Determine Quantization error in storing result using Q.6 Format.
- Q.2 (a)** Explain How numbers are represented in different fixed point and floating point processor considering dynamic range and precision? How fractional number 1.18 is converted in to Q.15 format? **07**
- (b)** Discuss Real time implementation Consideration used in DSP. **07**
- OR**
- (b)** Explain difference between Von Neumann & Harvard Architecture. Which Architecture is preferred for DSP Application? Also explain different techniques adopted for increasing the number of memory access per instruction cycle. **07**
- Q.3 (a)** Explain functional block diagram of TMS320C54x Processor. **07**
- (b)** How indirect addressing modes can be used with (1) Offset address generation **07**
 (2) index address generation (3) Circular Addressing (4) Bit reversal addressing. Discuss with suitable example.
- OR**
- Q.3 (a)** Explain Central Processing Unit in TMS320C54x Processor. **07**
- (b)** Discuss different Multiply and Accumulate instruction used in 54x Processor. **07**
 Also discuss special instructions used in 54x processor.
- Q.4 (a)** Write a detail note on CPU of TMS320C67x DSP with its functional unit and its operations. **07**
- (b)** Explain different instructions used for conversion of data formats in TMS320C67x. **07**
- OR**
- Q.4 (a)** Write note on structure of datapaths for TMS320C67x processor. **07**
- (b)** Explain different pipelining operations performed in 67x processor in detail. **07**
- Q.5 (a)** Write a short note on applications of FIR Filter. **07**
- (b)** How convolution is performed in DSP processor? Write C program to perform the same in floating point processor. **07**
- OR**
- Q.5 (a)** Write a short note on applications of adaptive filter. **07**
- (b)** Explain different on chip peripherals used in P-DSPs. **07**
