R09

Code No: D3810, D0609, D7010, D4508, D5705

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech II - Semester Examinations, March/April 2011
DIGITAL SIGNAL PROCESSORS AND ARCHITECTURES
(COMMON TO DIGITAL ELECTRONICS & COMMUNICATION SYSTEMS, DIGITAL SYSTEMS & COMPUTER ELECTRONICS, ELECTRONICS & COMMUNICATION, SYSTEMS & SIGNAL PROCESSING,VLSI SYSTEM DESIGN)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

\- - -

1 a) Write a user defined MATLAB function for computing the FFT of a given sequence without using the built-in function.
b) The signal x(n) = {0 2 4 6 8 } in interpolated using the interpolation filter sequence b_k = { 0.5 1 0.5 } and the interpolation fact is 2. Determine the interpolated sequence y(m). [12]

2) a) What are ADC and DAC conversion errors in DSP Implementation. Explain briefly about them.
b) What is a compensating Filter? Explain in detail the use of compensating Filter. [12]

3) a) Explain about the address generation unit and Memory organization of a DSP Processor.
b) Explain in detail the features for external interfacing of DSP processors. [12]

4) a) Describe the Pipeline operation and pipeline latency cycles of a DSP Processor.
b) Explain about the circular addressing mode with an example illustration. [12]

5) a) Before the execution of the MAC *AR5+, A instruction the contents of the register are as follows

	Before Instruction
A	00 0000 1000
T	0400
FRCT	0
AR5	0100
Data Memory	
0100h	1234

Give the contents of the registers after the execution of the above instruction
b) Explain about bit reversed index generation in detail. [12]

6) a) What is Q-notation. Why is it used in DSP processors? Explain.
b) Explain about the various on chip peripherals provided on the TMS320C54XX Processor. [12]

7) a) Draw the multichannel buffered serial port (MCBSP) block diagram and explain each signal.
b) Briefly explain about DMA

8) Write short Note on any **Two**
i) FFT Butterfly computation ii) Signal Spectrum
iii) Branching effects and Interlocking [12]

*****