APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

Q. P. Code : CSP0818141-P **(Pages: 2)** **Name:**..............................

Reg. No:..............................

FIRST SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2018

Branch: ECE **Specialization: CESP & ECE**

08 EC 6241/6541 DESIGN OF DIGITAL SIGNAL PROCESSING SYSTEMS

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

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q.no.	Module 1	Marks
1.a	Explain the features of VLIW architecture with the help of a diagram.	3
	Answer b or c	
b	Explain briefly the architecture of TMS320C6x DSP processor.	6
c	Explain clearly the interrupt system of TMS320C6x DSP processors	6

Q.no.	Module 2	Marks
2.a	Explain the assembler directives used in TMS320C6x DSP processors with examples.	3
	Answer b or c	
b	Explain briefly the various linear and circular addressing modes used in TMS320C6x DSP processors.	6
c	With suitable examples explain various types of instructions in the instruction set of TMS320C6x DSP processors ?	6

Q.no.	Module 3	Marks
3.a	What are the different ways of invoking assembly language in C-code ?	3

Answer b or c

b	Explain briefly, about compiler, assembler and linker.	**6**
c	Briefly describe the steps involved in code generation in TMS320C6x processor based system using Code Composer Studio.	**6**

Q.no.	**Module 4**	**Marks**
4.a	What is the computational advantage in calculating 64 point DFT using FFT over direct computation ?	**3**

Answer b or c

b	Using MATLAB, write program to compute the DFT of the 8 point sequence x (n) = (1 1 1 1 0 0 0 0) .Also compute the IDFT of the 8 coefficients to verify the DFT result.	**6**
c	Design a Butterworth LPF using MATLAB with passband and stop band attenuations of 0.4dB and 30 dB at passband and stop band frequencies of 400 Hz and 800 Hz respectively. Sampling frequency is 2 kHz.	**6**

Q.no.	**Module 5**	**Marks**
5.a	What is meant by finite word length effect with reference to FFT implementation?	**4**

Answer b or c

b	Explain the method of tone generation of DTMF in detail.	**8**
c	Explain how fast convolution is implemented using FFT in MATLAB.	**8**

Q.no.	**Module 6**	**Marks**
6.a	Write down the steps involved in the implementation of FSK modem using DSP technique.	**4**

Answer b or c

b	Explain clearly how DSP is practically implemented in various fields of speech /voice processing ?	**8**
c	With the help of a block diagram explain how a PLL is implemented using DSP system.	**8**