Hall Ticket Number :										

R-14

Code: 4G365

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2018

Digital Signal Processing

(Electronics & Communication Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Test the following systems for Linearity, Time Invariant, Stability and Causality
   i) y(n) = x(-n+2) ii) y(n)= |x(n)| 7M
   b) Determine the zero input response y(n), n ≥ 0 of the system described by the homogeneous second order difference equation y(n)-3y(n-1)-4y(n-2)=0 7M

OR

2. a) Determine the eight-point DFT of the signal: x(n) = {1,1,1,1,1,1,0,0} 7M
   b) Prove the following DFT properties :Periodicity, Circular Convolution 7M

UNIT–II

3. a) What is FFT? Why FFT is preferred compared to DFT. 5M
   b) Calculate DFT of the sequence x(n)={1,2,3,4,4,3,2,1} using DIT-FFT algorithm. 9M

OR

4. a) Discuss about DIF-FFT algorithm. 7M
   b) Compute 8 point DFT of the sequence x(n)={1/2,1/2,1/2,1/2,0,0,0,0}using DIT-FFT algorithm. 7M

UNIT–III

5. a) Explain the concept of Analog filter approximations using Butterworth and Chebyshev. 7M
   b) Determine Direct form II Realization for following system.
   Y(n)=0.2y(n-1)+0.52y(n-2)+0.4x(n)- 0.25x(n-2) 7M

OR

6. a) Compare IIR and FIR filters. 5M
   b) Explain the Design of FIR digital filters using frequency sampling technique. 9M

UNIT–IV

7. a) Explain Decimation by a factor D. 7M
   b) Given D=100; PB: 0≤F≤50; TB: 50≤F≤55; PB ripple:10^{-2}; SB ripple:10^{-4}. Design Two stage Decimator. 7M

OR

8. a) Discuss Interpolation by a factor I. 7M
   b) Discuss Multistage implementation of Sampling rate conversion. 7M

UNIT–V

9. a) Discuss spectral analysis of non stationary signals in DSP. 7M
   b) Explain the major blocks in Musical sound processing. 7M

OR

10. a) Discuss Oversampling A/D conversion in signal processing applications. 7M
    b) Write Short notes on signal compression technique. 7M

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III B.Tech. II Semester Supplementary Examinations Nov/Dec 2018

Microprocessors and Interfacing

(Electronics and Communication Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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UNIT–I

1. a) Explain the following instruction (i) DAA (ii) MOV (iii) PUSH (iv) CMPS (v) LEA (vi) ROR (vii) JNZ (viii) TEST (ix) NEG (x) MOVSB 10M

   b) Compare macros and procedures? Write a macro and procedure to produce a delay of 100 msec? 4M

OR

2. a) Draw the 8086 minimum mode bus timing diagram for an input transfer operation that requires no wait states and explain? 10M

   b) Write an 8086 ALP to perform signed Multiplication of two 8-bit numbers. 4M

UNIT–II

3. a) Explain the internal architecture of 8255 and explain its modes of operation in detail. 10M

   b) Show the interfacing of DAC with 8086 microprocessor and relevant ALP to generate Square Waveform. 4M

OR

4. a) Interface a stepper motor to 8086 microprocessor and write an assembly language program (ALP) to rotate 100 teeth, 4-phase stepper motor five rotations clockwise and five rotations anticlockwise. 10M

   b) State the differences between SRAM and DRAM cell structure in detail. 4M

UNIT–III

5. a) Explain the operating modes of 8253 timer/counter in detail with suitable diagrams. 10M

   b) Distinguish between programmed I/O and Interrupt driven I/O. 4M

OR

6. a) Draw the block diagram of 8259 PIC and gives its interrupt priority modes? 10M

   b) Discuss the Interrupt structure of 8086 microprocessor. 4M

UNIT–IV

7. a) Draw the block diagram of 8251 USART and explain each block. 10M

   b) Write about asynchronous data transfer schemes with suitable examples. 4M

OR

8. a) With the help of a flowchart, write a program to transmit 200 bytes of serial data. 10M

   b) Draw and Explain TTL to RS232 & RS232 to TTL conversion circuits 4M

UNIT–V

9. Explain Real and Virtual mode in 80286? Also explain the mapping of virtual memory with physical memory and also tell the phenomenon of using page table in microprocessor? Draw and discuss the register organization of 80386? 14M

OR

10. Draw the architecture of a Pentium processor, and list out some salient features of Pentium and Pentium pro processors. 14M

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