AR13

CODE: 13EC3018   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, January-2018

SIGNALS AND SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 Hours   **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS   **[1 x 10 = 10 M]**

1.
   a) Explain singularity functions
   b) Explain the difference between time-variant and time-Invariant systems.
   c) Sketch the signal $\delta(t-3)$?
   d) Write down the conditions for existence of Fourier series.
   e) Write the parseval's energy relation
   f) Find the Fourier transform of $e^{-at}u(t)$.
   g) Write the time shifting property of Laplace transform.
   h) Write the relationship between DTFT and CTFT.
   i) Explain the difference between Fourier series representation and Fourier transform representation.
   j) Explain the difference between Laplace transform and z-transform.

PART-B

Answer one question from each unit   **[5x12=60M]**

UNIT-I

2. Determine and sketch the convolution of the following two signals   **12M**

   $$X(t)=\begin{cases}1; -1 < t < 1;\\ 0; elsewhere\end{cases} \text{ and h(t)=}\delta(t+1)+2\delta(t+2)$$

   (OR)

3.
   a) Explain the following singularity functions: **6M**
      i) Unit Step ii) Unit Impulse iii)Unit Ramp functions

   b) Explain how stability of LTI System is to be obtained with an example.   **6M**

UNIT-II

4. a) Explain the relationship between the Trigonometric and exponential Fourier series.   6M

    b) Write the any three properties of Fourier series.   6M

(OR)

5. a) Explain the following   6M
        i) Even symmetry   ii) Odd symmetry

    b) Find the trigonometric Fourier series for the square wave   6M
        $X(t)=\begin{cases} A; 0 < t < \pi; \\ -A; \pi < t < 2\pi \end{cases}$

UNIT-III

6. a) Find the Fourier transform of the following 2 signals   6M
        $X_1(t) = \cos(2\pi f_0 t)$ and $X_2(t) = \sin(2\pi f_0 t)$

    b) Find the Fourier Transform of rectangular pulse signal   6M
        $X(t)=\begin{cases} A; -T < t < T; \\ 0; \text{ otherwise} \end{cases}$
        and also draw the magnitude and phase response.

(OR)

7. a) For LTI System described by the impulse response   6M
        $h(t) = \delta(t) - 2e^{-2t} u(t)$. Determine and Sketch the frequency response.

    b) Consider an exponentially damped sinusoidal wave defined by   6M
        $g(t) = e^{-t}\sin(2\pi f_c t)u(t)$. Find the Fourier transform of g(t)

UNIT-IV

8. a) Find the Laplace transform of the following damped sinusoidal   6M
        signals
        i) $g1(t) = e^{-at}\cos(2\pi f_0 t)u(t)$ and ii) $g2(t) = e^{-at}\sin(2\pi f_0 t)u(t)$. And also find the region of convergence.

    b) Explain unilateral Laplace transform in detail.   6M

(OR)

9. a) Determine the Inverse Laplace transform of $X(s)=\dfrac{-3}{(s+2)(s-1)}$ 6M
        If the ROC is
        i) R{s}>1   ii) R{s}<-2   iii) -2<R{s}<1

    b) Explain the relation between Laplace transform and Fourier   6M
        Transform

UNIT-V

10. a) Explain Z-tranform of a signal and ROC.   6M
     b) Explain causality and stability analysis using Z-Transform.   6M

(OR)

11. a) Explain Block diagram representation using Z-Transform.   6M
     b) Explain the relation between z-Transform and Laplace Transform. 6M

CODE: 13CS3008

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, January-2018

COMPUTER ORGANIZATION AND ARCHITECTURE
(Electronics and Communication Engineering)

Time: 3 Hours   **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS   **[1 x 10 = 10 M]**

1.
   a) Define multiprocessor
   b) What is instruction format
   c) What are the basic elements of floating point addition
   d) Write the need for different addressing modes
   e) Distinguish multiprocessors and multi computers
   f) Define decimal arithmetic unit
   g) Write various computer registers
   h) Write features of RISC
   i) List the characteristics of multiprocessors
   j) Describe Cache coherence

PART-B

Answer one question from each unit   **[5x12=60M]**

UNIT-I

2.
   a) Explain bus structure With diagram   6M
   b) Discuss in detail about floating point representation and also explain floating point arithmetic operations.   6M

(OR)

3.
   a) Define computer organization and explain different type of computer   6M
   b) Write in detail Bus Structure and performance of a computer.   6M

UNIT-II

4.
   a) Explain addition/subtraction of floating point numbers with necessary flow chart   6M
   b) Explain about floating point arithmetic   6M

(OR)

5. With Hardware implementation & flowchart explain signed multiplication.   12M

UNIT-III

6. Explain instruction set characteristics and functions   12M

(OR)

7.
   a) Write Arithmetic and logical micro operations   6M
   b) Write Von Neumann and Harvard Architectures   6M

UNIT-IV

8. Explain in detail about memory hierarchy   12M

(OR)

9.
   a) Explain virtual memory concept in detail   6M
   b) Draw the block diagram and explain how data is transferred with the help of DMA   6M

UNIT-V

10.
    a) Explain pipe line conflicts and discuss the remedies for those conflicts   6M
    b) Explain the concept of pipeline in general and arithmetic pipeline in detail   6M

(OR)

11.
    a) Differentiate between RISC and CISC machine and explain about RISC architecture   6M
    b) Write about Inter processor arbitration   6M

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