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Question Paper Code: 56424

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Sixth Semester

Electrical and Electronics Engineering

01UEC624 - APPLIED DIGITAL SIGNAL PROCESSING

(Common to EIE and ICE)

(Regulation 2013)

Duration: 1.15 hrs   Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. The system $y(t) = 3x(t) + 5$ is a _____ system.

    (a) Non-linear   (b) Dynamic   (c) Non-Causal   (d) unstable

2. Integration of step signal results in _____ signal.

    (a) ramp   (b) delta   (c) Sinusoidal   (d) triangular

3. The LTIDT system with system function $h(n) = a^n u(n)$ is stable, only if

    (a) $a > 1$ (b) $1/a < \infty$ (c) $a < \infty$ (d) $a < 1$

4. Convolution in time domain is equal to _____ in frequency domain.

    (a) addition   (b) multiplication   (c) compression   (d) expansion

5. The phase factors are multiplied before the add and subtract operations in

    (a) DIT Radix 2 FFT   (b) DIF Radix 2 FFT
    (c) Inverse DFT   (d) Both (a) and (c)

6. Compute the $X(0)$ of the sequence $x(n) = \{1, 0, 1, 0, 1, 0, 1, 0\}$

    (a) 8   (b) 4   (c) 2   (d) 1

7. The condition for linear phase characteristic in FIR filter is, the impulse $h(n) =$_____
    where N is the duration of the sequence.

    (a) $h(n+N-1)$ (b) $h(N+1-n)$ (c) $h(N-1-n)$ (d) $h(n-N-1)$

8. When s=_____ LPF is converted to HPF in analog domain.

   (a) $\frac{s}{\Omega_c}$ (b) $\frac{\Omega_c}{s}$ (c) $s\Omega_c$ (d) s^2

9. The pipeline depth of TMS320C50 is

   (a) 6   (b) 4   (c) 2   (d) 0

10. The function of wait-state generator is

   (a) To insert wait-state in internal and external bus cycles
   (b) To insert wait-state in data memory cycles

   (c) To insert wait-state in program memory cycles

   (d) To insert wait-state in external bus cycles

<center>PART – B (3 x 8= 24 Marks)</center>

<center>**(Answer any three of the following questions)**</center>

11. Explain the process of reconstruction of the signal from its samples with expression.
    (8)

12. Discover the general solution of the difference equation $y(n) = x(n) - 3y(n-1)$ with initial condition $y(-1) = 0$ and input $x(n) = n^2 + n$. (8)

13. Compute the eight-point DFT of the sequence $x(n) = \{n+1\}$, Using the radix-2 decimation-in-time algorithm. (8)

14. Design a low pass filter using rectangular window by taking 9 samples of *W(n)* and with a cutoff frequency of 1.2 *rad /sec*. (8)

15. Explain the architecture of TMS320C50 with a neat diagram. (8)

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