

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2014 COURSE)
B.Tech.Sem - VI E & TC : WINTER- 2022
SUBJECT : DIGITAL SIGNAL PROCESSING

Day : Thursday

Time : 10:00 AM-01:00 PM

Date : 24-11-2022

W-13361-2022

Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
 - 2) Figure to the **RIGHT** indicate full marks.
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Q.1 What are the factors which control the accuracy in analog circuits and in digital signal processing system? [10]

OR

Q.1 What is relation between DFT and Z-Transform and F. T.? [10]

Q.2 State and prove any five properties of DFT? [10]

OR

Q.2 Find Y (n) by overlap save and add. Algorithm of sequence
 $h(n) = \{1, 2, 1, 2\}$ $X(n) = \{1, 0, 1, 3, 2, 2, 1, 2, 2, 1\}$ [10]

Q.3 What is frequency sampling method? Explain detail with example? [10]

OR

Q.3 Design special FIR filter structures [10]
 $H(z) = \left[1 + \frac{3}{4}z^{-1} + \frac{1}{8}z^{-2} \right] \left[1 - \frac{3}{8}z^{-1} - \frac{1}{3}z^{-2} \right]$

Q.4 Design digital IIR filter by using BLT method of transfer function [10]
 $H_a(s) = \frac{S + 0.1}{(S + 0.1)^2 + 9}$

OR

Q.4 Design Chebyshev filter [10]
 $\alpha_p = 0.5 \text{ db}$, $\Omega_p = 30 \text{ rad/sec}$ $\alpha_b = 30 \text{ db}$ at $\Omega_s = 50 \text{ rad/sec}$

Q.5 What is oscillations and where do we find them in the field of digital filter? [10]

OR

Q.5 How to minimizing finite word length effects? [10]

Q.6 What are features of DSP processor? Explain modified Harvard Architectures in detail? [10]

OR

Q.6 Explain Bus structure, addressing model and processing units of DSP processor? [10]

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