

Registration Number:

Date & session:



ST JOSEPH'S UNIVERSITY, BENGALURU -27
M.Sc (BIG DATA ANALYTICS) – II SEMESTER
SEMESTER EXAMINATION: APRIL 2024
(EXAMINATION CONDUCTED IN MAY / JUNE 2024)
BDADE2821 – DIGITAL SIGNAL PROCESSING
(For current batch students only)

Time: 2 Hours

Max Marks: 50

This paper contains ONE printed pages and THREE parts

PART-A

Answer All the Questions

5 x 2 = 10

1. Represent the unit step signal.
2. When is a system said to be causal and stable?
3. State any two properties of Z transform.
4. Draw the basic butterfly of radix-2 FFT.
5. Differentiate harward and Von neumann architecture.

PART-B

Answer any FIVE Questions

5 x 4 = 20

6. Evaluate the Z-transform of the sequence $x(n) = \{2, 1, -1, 0, 3\}$
7. Explain the following with respect to discrete-time system
 - a) Stability
 - b) Casuality
8. Differentiate DIT radix-2 FFT and DIF radix-2 FFT.
9. Explain briefly about pipelining concepts.
10. Write about periodicity property in FFT with proof.
11. Check if $x(n) = \cos(\pi/4)n$ is an energy or power signal.
12. Sketch the following signals.
 - a) $x(t) = r(t)$
 - b) $x(t) = r(-t+2)$
 - c) $x(t) = r(t-2)$ where $r(t)$ is the ramp signal.

PART-C

Answer any TWO questions

2 x 10 = 20

13. Find the 8-point DIF FFT of the given Sequence. $x(n) = \{1, 1, 1, 1, 1, 1, 0, 0\}$
14. Discuss about addressing modes of DSP.
15. Write down the properties of Z transform with proof.

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