ST.JOSEPH'S UNIVERSITY, BENGALURU -27
M.Sc. (BIG DATA ANALYTICS) – II SEMESTER
SEMESTER EXAMINATION: APRIL 2023
(Examination conducted in May 2023)
BDADE2821 – DIGITAL SIGNAL PROCESSING
(For current batch students only)

Time: 2 Hours   **Max Marks: 50**
This paper contains ONE printed page and THREE parts

PART-A
ANSWER ALL THE QUESTIONS   **5 x 2 = 10**
1. What are the different types of systems?
2. Discuss about odd and even signal with example
3. Discuss about Linearity property in DFT.
4. How will you find the stability of the system in Z transform?
5. Write down the difference between processor and Controller.

PART-B
ANSWER ANY FIVE QUESTIONS   **5 x 4 = 20**
6. Write down the properties of FFT.
7. Explain about the following properties of systems with examples
   i)   Time Invariant
   ii)   Causality
8. Write down the Applications and limitations of Digital signal Processing.
9. Find IDFT for the following Sequence. $X(k)=\{1,0,1,0\}$
10. Explain briefly about pipelining concepts.
11. Write down the properties of ROC in Z Transform.

PART-C
ANSWER ANY TWO QUESTIONS   **2 x 10 = 20**

12. Find the 8-point DIF FFT of the given Sequence. $x(n)=\{1,1,1,1,0,0,0,0\}$
13.
   a) Find Z transform of $x[n]= a^n u(n)$ (6)
   b) Discuss the relation between DTFT and Z Transform   (4)

14.
   a) Write down the features of DSP Processors.   (4)
   b) Find whether the following signal is periodic. If periodic determine the
       fundamental period: $x(t) = \cos\left(\frac{\pi}{3}t\right) + \sin\left(\frac{3\pi}{4}t\right)$ (6)