

S.B. Roll No.....

**DIGITAL SIGNAL PROCESSING**  
**6<sup>th</sup> Exam/ECE/4614/Jan'2022**  
**(FOR 2018 BATCH ONWARDS)**

**Duration: 1.15Hrs.**

**M.Marks:25**

**SECTION-A**

**Q1. Attempt any three questions.**

**5x3=15**

- a. Differentiate FIR and IIR filters.
- b. Give the relation between Z-transform and discrete Fourier transform.(DTI).
- c. Give the computational efficiency of FFT over DFT.
- d. Explain the direct form realization of FIR filters.
- e. Compare direct form I and direct form II realization of IIR filters.
- f. What are the applications of Z-Transforms?
- g. What are the basic building blocks of realization structures?

**SECTION-B**

**Q2. Attempt any one question.**

**1x10=10**

- i. Explain the different types of structures for the realization of IIR filters.
- ii. Find the DFT of the following sequence using DIF FFT.  
 $X(n) = \{1, 2, 3, 5, 5, 3, 2, 1\}$
- iii. What are the requirements for converting a stable analog filter into a stable digital filter?
- iv. Explain the applications of DSP.