S.B. Roll. No……

DIGITAL SIGNAL PROCESSING
6th Exam/ECE/4614/Dec'22
(For 2018 Batch Onwards)

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Do as directed. **15x1=15**

a. Define System?
b. Define Even signal?
c. Define convolution?
d. What is the advantage of a Direct form II FIR over form I?
e. Determine whether the system defined by y(t)=2x(t)+5 is casual or Non Casual?
f. What is full form of FIR?
g. Define Sampling?
h. What are advantages of IIR filter over FIR filter?
i. What are two mainly algorithms used by FFT?
j. Write the expression for Inverse z transform of $\frac{z}{z-1}$ for ROC |Z|>1?
k. What is full form of IDFT?
l. What is Fourier transform of sin (wt) function?
m. DIF stands for?
n. What is the need of Z Transform?
o. FFT algorithm is designed to perform complex operations.(T/F)?

SECTION-B

Q2. Attempt any six questions. **6x5=30**

i. State and explain the time shifting Property of DFT?
ii. Compare IIR and FIR filters?
iii. Write down the various applications and features of DSP processor?
iv. Differentiate between convolution and correlation?
v. Compute the Z Transform of discrete signal x(n)=$U(n-no)$?
vi. What do you understand by recursive and non-recursive FIR systems?
vii. Check whether the system is periodic or not X(n)= Sin(2n)
viii. What are the advantages of representing the digital filter in block diagram form?
ix. Write properties of Z-transform?(any Four)
x. Compare direct form I and direct form II realiztion of IIR filters?

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Explain the various Elements of Digital Signal Processing system in detail?
b. Find the DFT of four point sequence of x(n)={ 1,1,1,1}.
c. Write note on any two :
   i) Casuality of LTI system ii) z-transform of unit impulse signal iii) Correlation of Signals
d. Find the inverse Z-transform of $\frac{z}{z-2}$ for ROC |z|<2 using long division method?
e. What is Discrete fourier Transform? Discuss the use of DFT in linear filtering?
f. Explain the process of designing cascaded of filter structures?