Total No. of Question : [4]

Registration No. : ⬜⬜⬜⬜⬜⬜⬜⬜⬜

Programme Name : Bachelor of Electronics and Telecommunication Engineering
Regular S.Y.B.Tech.Sem.IV ESE May / June 2023
IV SEMESTER (2021 BATCH)
201ETL213-Signals and Systems

Duration : 2 Hours   **Marks : 50**
Instructions :

(Q1) **All Questions are compulsory**   [20.0]

(1.1) What are the different type of elementary signals ? Explain each with their   [6.0]
mathematical expression and represent each with graphical representation

CO :- C213.1
Blooms Taxonomy :- Understand

(1.2) Sketch the following signal x(t)=2sin?t for an interval 0 < t < 2.sample the C.T. signal   [7.0]
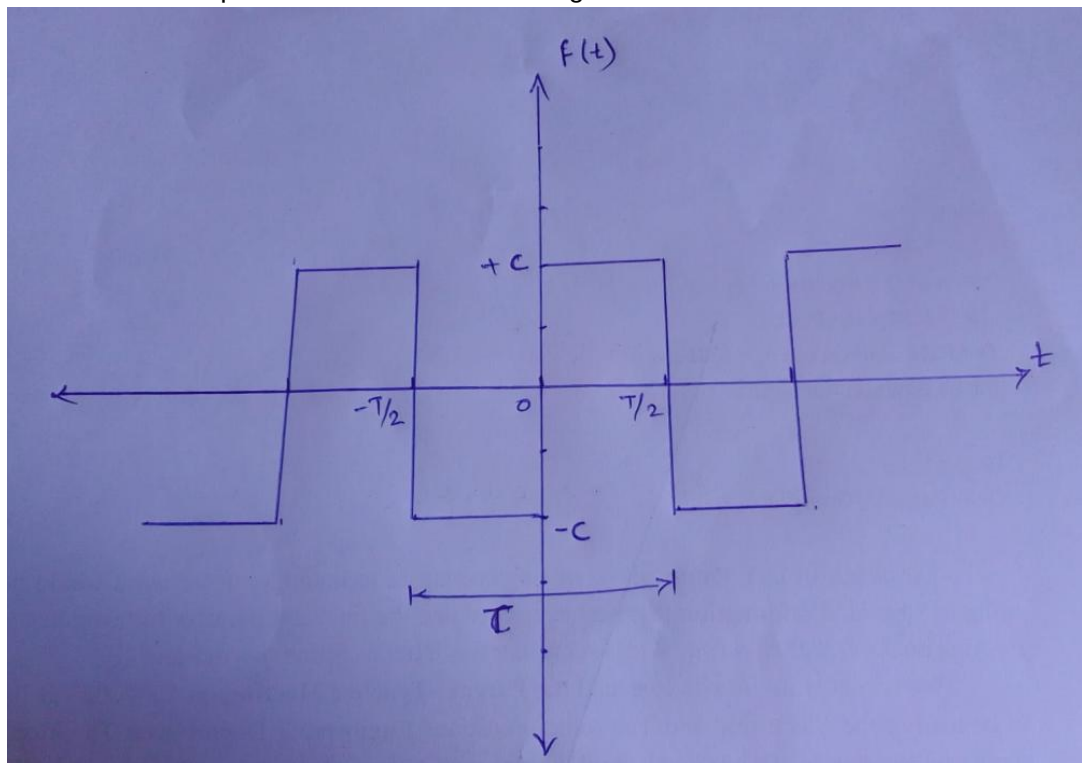with sampling period T=0.25 & sketch DT signal

CO :- C213.1
Blooms Taxonomy :- Understand

(1.3) Determine the exponential F.S. of the following waveform   [7.0]

CO :- C213.2

Blooms Taxonomy :- Analyze

(Q2) **All Questions are compulsory** [10.0]

(2.1) Describe the following properties of D.T.F.T [4.0]
1.Linearity
2.Time shifting
3.Time scaling
4.Frequency shifting

CO :- C213.2
Blooms Taxonomy :- Analyze

(2.2) Find F.T. of signal $x(t)=e^{-at} \cdot u(t)$ and sketch its magnitude and phase . [6.0]

CO :- C213.2
Blooms Taxonomy :- Analyze

OR [2.2 / 2.3]

(2.3) Find IDFT x(K)={1, 1-j2, -1, 1+j2} [6.0]

CO :- C213.2
Blooms Taxonomy :- Analyze

(Q3) **Attempt any two out of three questions** [10.0]

(3.1) Compute z-Transform and their ROC [5.0]
$x(n)= -b^n u(-n-1)$

CO :- C213.3
Blooms Taxonomy :- Apply

(3.2) Using long division method determine inverse z-transform [5.0]
$X(z)=1+2z^{-1} /1-2z^{-1} +z^{-2}$

CO :- C213.3
Blooms Taxonomy :- Apply

(3.3) Write down properties of ROC with their wavforms in z-transform with their explanation [5.0]

CO :- C213.3
Blooms Taxonomy :- Apply

(Q4) **Attempt any two out of three questions** [10.0]

(4.1) Explain direct form II realization DT-LTI System [5.0]

CO :- C213.4
Blooms Taxonomy :- Create

(4.2) Explain direct form I realization DT-LTI System. [5.0]

CO :- C213.4
Blooms Taxonomy :- Create

(4.3) Explain direct form -I realization DT-LTI System. [5.0]

$$y(n) - \frac{5}{6} y(n-1) + \frac{1}{6} y(n-2) = x(n) + 2x(n-1)$$

CO :- C213.4
Blooms Taxonomy :- Create

****