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**Question Paper Code: U3B03**

B.E./B.Tech. DEGREE EXAMINATION, NOV 2022

Third Semester

Biomedical Engineering

21UBM303- PRINCIPLES OF SIGNALS AND SYSTEMS

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (10x 2 = 20 Marks)

1. Sketch the given signal. CO2- Ana  
 $u[n+2] - u[n-3]$
2. Is the signal  $x(t)=10\cos(2\pi t) + \sin(5\pi t)$  a periodic signal. If it is, determine the fundamental period? CO2- Ana
3. State Convolution property for laplace transforms. CO1- U
4. Define fourier transform pair. CO1- U
5. Define LTI-CT systems. CO1- U
6. What are the tools used for analysis of LTI-CT systems? CO1- U
7. Define Sampling theorem. CO1- U
8. Write the main condition to avoid aliasing? CO1- U
9. Illustrate the relationship between impulse response and transfer function of a DT-LTI system. CO3- App
10. Is the discrete time system described by the difference equation  $y(n) = x(-n)$  causal? CO3- App

PART – B (5 x 16= 80Marks)

11. (a) Classify the different types of systems and explain them. CO3-App (16)

Or



15. (a) Determine the system function and output response  $y(n)$  of a linear time invariant discrete time system specified by the equation  $y(n) - 1.5y(n-1) + 0.5y(n-2) = 2x(n) + 1.5x(n-1)$  CO3-App (16)

Or

- (b) Obtain the direct form I and Direct form II realization of the system described by the difference equation  $y(n) + 0.75y(n-1) - 0.125y(n-2) = x(n) + 7x(n-1) + x(n-2)$ . CO3-App (16)

