

**ANURAG Engineering College**

(An Autonomous Institution)

II B.Tech I Semester Regular Examinations, Jan/Feb-2024

**SIGNALS AND SYSTEMS**

(ELECTRONICS AND COMMUNICATION ENGINEERING)

**Time: 3 Hours****Max. Marks: 60****Section – A (Short Answer type questions)****(10 Marks)****Answer All Questions**

	<b>Course Outcome</b>	<b>B.T Level</b>	<b>Marks</b>
1. Define Signum function	CO1	L1	1M
2. List the properties of an Impulse function	CO1	L1	1M
3. What is Hilbert Transform?	CO2	L1	1M
4. State the Dirchlet's conditions for convergence of Fourier series	CO2	L2	1M
5. What is meant by an LTI system.	CO3	L1	1M
6. What is the Paley-Wiener criterions for physical realization	CO3	L2	1M
7. What is ROC?	CO4	L1	1M
8. Find the Laplace Transform of Exponential function	CO4	L2	1M
9. What is aliasing	CO5	L1	1M
10. Define Autocorrelation	CO5	L1	1M

**Section B (Essay Questions)****Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

11. A) Describe the functionality of Complex exponential signals and Sinusoidal signals.	CO1	L3	10M
<b>OR</b>			
B) Discuss about Orthogonal Signal Space and obtain the expression for mean signal error.	CO1	L3	10M
12. A) State and Prove the Properties of Fourier Transform	CO2	L2	10M
<b>OR</b>			
B) Derive the expression for Fourier Transform from Fourier Series.	CO2	L2	10M
13. A) Describe the different ideal filter characteristics of systems.	CO3	L2	10M
<b>OR</b>			
B) Determine the convolution of the signals $x(n)=\{4,3,2,1\}$ and $h(n)=\{1,1,1,1\}$	CO3	L2	10M
14. A) State and prove initial and final value Theorems of Z-transform.	CO4	L2	10M
<b>OR</b>			
B) Evaluate the Laplace Transforms of the following functions i) Exponential function ii) Unit step function iii) Damped sine function.	CO4	L2	10M
15. A) State and explain the sampling theorem for band limited signals with graphs analysis.	CO5	L3	10M
<b>OR</b>			
B) Derive the relationship between the Autocorrelation Function and Power Spectral Density	CO5	L3	10M

