INTEGRAL UNIVERSITY LUCKNOW

Department of Electronics&Comm. Engineering

Signal & System

ASSIGNMENT-1

Branch/Sem: B.Tech./ECE/ (IVthSEM.) Session-2013-14
Faculty-Qazi Saeed Ahmad Date of issue-_____
Subject Code: I**EC-402** Date of Submission-_____
Unit:1

Q.1 Define a signal.and explain different types of signal
Q.2 What is the period T of the signal x(t)= 2 Cos(t/4)
Q.3 Define continuous-time, discrete-time and digital signals.
Q.4 What is the value of the following integral?
-? ?? x(t) ? (at-b) dt
Q.5 What are the different types of representations of DT Signals?
Q.6 Define a system
Q.7 Define i) CT Signals ii) DT Signals
Q.8 What are the classifications of systems?
Q.9 Is the system
Y(t) = y (t-1) + 2ty(t-2) time-invariant?
Q.10 Define Even and Odd Signals.
Q.11 Define CT and DT Signals.
Q.12 Define causal and non-causal signals.
Q.13 Define Lumped-parameters and distributed-parameter system.
Q.14 Define Linear and Non-Linear Systems.
Q.15 Define stable and non-stable systems.
Q.16 Define Invertible and non-Invertible system.
Q.17 List the transformations in independent variables of signals.
Q.18 Find out the energy of the given signal

X(t) = {2|t| (?=5 secs)}
= { 0, elsewhere}
Q.18 Find out x(t)=2 Cos(10t+1) – Sin(4t-1) is periodic
Q.19 Find out the energy of the given signal x(t)m = {5. |t| < ? (?=2 secs)}

Q.20 Sketch the function x(t) = r(-0.5t +2).
Q.21 Find out x(t)=3 Cos(15t+1) – Sin(6t-1) is periodic.
Q.2 2 Find out x(n)= 3 Cos [2n/3] is periodic
Q.23 Given y(t)= x(t-1) Find out whether the system is causal.

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ASSIGNMENT-2

Branch/Sem: B.Tech./ECE/ (IVthSEM.) Session-2013-14
Faculty-Qazi Saeed Ahmad Date of issue-_____
Subject Code: I**EC-402** Date of Submission-_____
Unit: 2nd

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1. Define Fourier series.
2. When a periodic signal is said to have a half-wave symmetry?
3. What is the relationship between cosine and Trigonometric representation?
4. Explain time shifting property of CT Fourier Series.
5. State Parseval's Theorem for CT Fourier Series
6. The Fourier expansion of a half-wave symmetry periodic signal contains _____ harmonics.
7. List the property of CT Fourier Series.
8. What is a single-sided & two-sided spectrum?
9. Define Fourier Transform of a Signal x (t).
10. Define Inverse Fourier Transform
11. What is the condition for existence of Fourier transform of a signal x(t).
12. State Duality property of Fourier Transform.
13. State Parseval's Theorem for CT aperiodic Signal.
14. State Time differentiation property of Fourier Transform.
15. State Time Shifting property of Fourier Transform.
16. State Frequency Shifting property of Fourier Transform.
17. State Time Convolution property of Fourier Transform.
18. State Linearity Property of Fourier Transform.
19. State Time Reversal Property of Fourier Transform.
20. State Time Scaling Property of Fourier Transform.
21. State Frequency differentiation Property of Fourier Transform.
22. State Time Integration Property of Fourier Transform.
23. State Conjugation Property of Fourier Transform.
24. State Auto Correlation Property of Fourier Transform.
25. State Multiplication Property of Fourier Transform.
26. x(t)= Sin (4 /3t) . Find the Fourier series coefficient ..

27. Find the Fourier Transform of the following and sketch the magnitude and phase spectrum.
(i) x(t)=e-at u(t)

28. Find the Fourier Transform of the following
(i) e at u(-t)
(ii) te-at u(t)

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ASSIGNMENT-3

Branch/Sem: B.Tech./ECE/ (IVthSEM.) Session-2013-14
Faculty-Qazi Saeed Ahmad Date of issue-_____
Subject Code: I**EC-402** Date of Submission-_____
Unit: 3rd

1.Define region of convergence of a Laplace transform.
2. What is the conditions for existence of Laplace transform?
3. How to obtain Fourier transform from its Laplace transform?
4. Find the Laplace transform of e-at u(t).
5. State bilateral and unilateral Laplace transform.
6. State the conditions for a region of convergence of a i) Causal signal b) non-causal.
7. State initial and final value theorem of Laplace transform.
8. Find initial value, if they exists using Laplace transform for S + 5/S2 + 3S + 2.
9. State time shifting properly of Laplace transform.
10. State inverse Laplace transform.
11. Define steady state and transients response.
12. What is the laplace transform of a zero state response?
13. Derive the transfer function of a ideal differentiator using laplace transform
14. Define poles and zeros of a transfer function.
15. What is the condition for the stability of a system?
16. What is the relation between Fourier transform and laplace transform.
17. Define state of a system.
18. Define step response of an LTI – CT system using convolution integral.
19. Say whether the following system with impulse response h(t) is stable or not
i) h(t) = t e-t u (t) ii) h(t) = e-2t u (t-1)
20. Find the step response of the system. Whose impulse response is given by h(t) = t u (t).
21. How can an arbitrary signal out can be represented as a linear combination of a scaled and shifted impulse functions.
22. What is the condition for a LTI CT system to be causal?
23. State duality property of Fourier transform.
24. State modulation property of Fourier transform.
25. Find the frequency response of an LTI-CT system described by
27. State time convolution property of Fourier transform.
28. Given the transform pair L [x (t)] = 2s/s2 –2. Determine the Laplace transform of x (2t).
29. Find the impulse response of H (s) = s+2/s2 + 5s + 4.
30. Find the transfer function of a ideal integrator.
31. State frequency shifting property of laplace transform.
33. What is meant by state of a system?
34. What is need of transforms in signal analysis?

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ASSIGNMENT-4

Branch/Sem: B.Tech./ECE/ (IVthSEM.) Session-2013-14

Faculty-Qazi Saeed Ahmad Date of issue-_____

Subject Code: I**EC-402** Date of Submission-_____

Unit: 4th & 5th