TWO MARK QUESTION AND ANSWERS

1. **Define Signal**.

A signal is a function of one or more independent variables which contain some information.

Eg: Radio signal, TV signal, Telephone signal etc.

2. Define System.

A system is a set of elements or functional block that are connected together and produces an output in response to an input signal.

Eg: An audio amplifier, attenuator, TV set etc.

3. Define CT signals.

Continuous time signals are defined for all values of time. It is also called as an analog signal and is represented by x(t).

Eg: AC waveform, ECG etc.

4. Define DT signal.

Discrete time signals are defined at discrete instances of time. It is represented by x(n).

Eg: Amount deposited in a bank per month.

5. Give few examples for CT signals.

AC waveform, ECG, Temperature recorded over an interval of time etc.

6. Give few examples of DT signals.

Amount deposited in a bank per month,

7. Define unit step, ramp and delta functions for CT.

Unit step function is defined as

$U(t) = 1$ for $t >= 0$

0 otherwise

Unit ramp function is defined as

$r(t)=t$ for $t>=0$

0 for $t<0$

Unit delta function is defined as

$\delta(t) = 1$ for $t=0$

0 otherwise

8. State the relation between step, ramp and delta functions (CT).

The relation ship between unit step and unit delta function is

$\delta(t) = u(t)$

The relationship between delta and unit ramp function is

$\delta(t).dt = r(t)$

9. State the classification of CT signals.

www.AllAbtEngg.com study materials for Anna University, Polytechnic & School

The CT signals are classified as follows

(i) Periodic and non periodic signals

(ii) Even and odd signals

(iii) Energy and power signals

(iv) Deterministic and random signals.

10. Define deterministic and random signals.

A deterministic signal is one which can be completely represented by Mathematical equation at any time.In a deterministic signal there is no uncertainty with respect to its value at any time.

Eg: $x(t)=\cos\omega t$ $x(n)=2\pi fn$

A random signal is one which cannot be represented by any mathematical equation.

Eg: Noise generated in electronic components, transmission channels, cables etc.

11. Define power and energy signals.

The signal x(t) is said to be power signal, if and only if the normalized average power p is finite and non-zero.

Ie. $0<p<4$

A signal x(t) is said to be energy signal if and only if the total normalized energy is finite and non-zero.

Ie. $0<E<4$

12. Compare power and energy signals.

Sl.No	POWER SIGNAL	ENERGY SIGNALS
1.	The normalized average power is finite and non-zero	Total normalized energy is finite and non- zero.
2.	Practical periodic signals are power signals	Non-periodic signals are energy signals

13. Define odd and even signal.

A DT signal x(n) is said to be an even signal if x(-n)=x(n) and an odd signal if x(-n)=-x(n).

A CT signal is x(t) is said to be an even signal if x(t)=x(-t) and an odd signal if x(-t)=-x(t).

14. Define periodic and aperiodic signals.

A signal is said to be periodic signal if it repeats at equal intervals. Aperiodic signals do not repeat at regular intervals.

www.AllAbtEngg.com study materials for Anna University, Polytechnic & School

A CT signal which satisfies the equation $x(t)=x(t+T_0)$ is said to be periodic
and a DT signal which satisfies the equation $x(n)=x(n+N)$is said to be periodic.

15. State the classification or characteristics of CT and DT systems.

The DT and CT systems are according to their characteristics as follows

(i). Linear and Non-Linear systems

(ii). Time invariant and Time varying systems. (iii). Causal and Non causal systems.

(iv). Stable and unstable systems.

(v). Static and dynamic systems. (vi). Inverse systems.

16. Define linear and non-linear systems.

A system is said to be linear if superposition theorem applies to that system. If it does not satisfy the superposition theorem, then it is said to be a nonlinear system.

17. Define Causal and non-Causal systems.

A system is said to be a causal if its output at anytime depends upon present and past inputs only.

A system is said to be non-causal system if its output depends upon future inputs also.

18. Define time invariant and time varying systems.

A system is time invariant if the time shift in the input signal results in corresponding time shift in the output.

A system which does not satisfy the above condition is time variant system.

19. Define stable and unstable systems.

When the system produces bounded output for bounded input, then the system is called bounded input, bounded output stable.

A system which doesnot satisfy the above condition is called a unstable system.

20. Define Static and Dynamic system.

A system is said to be static or memoryless if its output depends upon the present input only.

The system is said to be dynamic with memory if its output depends upon the present and past input values.

www.AllAbtEngg.com study materials for Anna University, Polytechnic & School