

**LECTURERS IN GOVERNMENT POLYTECHNIC COLLEGES (ENGINEERING AND NON-ENGINEERING) IN A.P TECHNICAL EDUCATION SERVICE. - NOTIFICATION NO.23/2018**

**ELECTRONICS AND COMMUNICATION ENGINEERING- 15TH MAR 2020 – S2 – REVISED KEY**

**Question Number : 2 Question Id : 2310981202**

A system with a unity gain margin and zero phase margin is \_\_\_\_\_.

**Answer:**

relatively stable

**Question Number : 9 Question Id : 2310981209**

If  $G(s) = \frac{5}{s}$  and  $H(s) = \frac{1}{s}$  then this is:

**Answer:**

type 3 system

**Question Number : 16 Question Id : 2310981216**

The unit impulse response of a system is  $h(t) = e^{-t}$ ,  $t \geq 0$

For this system, the steady state value of the output for unit step input is equal to:

**Answer: Deleted**

**Question Number : 17 Question Id : 2310981217**

Consider a system with the transfer function  $G(s) = \frac{s+6}{(Ks^2+s+6)}$ . Its damping ratio will be 0.5 when the value of K is:

**Answer: Deleted**

**Question Number : 28 Question Id : 2310981228**

Inverse Fourier Transform of  $\delta(\omega - \omega_0)$  is:

**Answer: Deleted**

**Question Number : 31 Question Id : 2310981231**

A system is given by  $x(t) = e^{at} u(t)$ . The system is \_\_\_\_\_.

**Answer: Deleted**

**Question Number : 32 Question Id : 2310981232**

Let  $x(t)$  be a signal with Nyquist rate  $w_0$ . Determine the Nyquist rate for  $y(t)=x(t)\cos(w_0t)$ .

**Answer: Deleted**

**Question Number : 34 Question Id : 2310981234**

If the discrete time sequence  $x(n)$ ,  $n \geq 0$  is defined to be  $n(n)$ , then the Z transform  $X(z)$  is (for  $|z| > 1$ ):

**Answer: Deleted**

**Question Number : 37 Question Id : 2310981237**

Channel capacity of a noise-free channel having  $M$  symbols is given by:

**Answer: Deleted**

**Question Number : 38 Question Id : 2310981238**

What is the total power carried by sidebands of the AM wave (DSB) for tone modulation for  $\mu = 0.4$ ?

**Answer: Deleted**

**Question Number : 40 Question Id : 2310981240**

A periodic signal  $F(t)$  has one of its period

$$F(t) = 2 \text{ for } 0 \leq t < 1 \\ -1 \text{ for } 1 \leq t < 2$$

And a signal  $g(t)$  is represented as,  $g(t) = \sum_{k=-\infty}^{\infty} \delta(t - 2k)$  if,  $\frac{df(t)}{dt} = (a_1)(g(t - t_1)) + (a_2)(g(t - t_2))$

What is the value of  $a_1$ ,  $a_2$ ,  $t_1$  and  $t_2$ ?

**Answer: Deleted**

**Question Number : 42 Question Id : 2310981242**

In PCM, the signal-to-quantisation noise ratio for a sinusoidal signal quantised using 10-bit PCM is:

**Answer: Deleted**

**Question Number : 43 Question Id : 2310981243**

If the unit step response of the network is  $(1 - e^{-at})$ , then its impulse response is:

**Answer: Deleted**

**Question Number : 44 Question Id : 2310981244**

For what value of  $\omega_0$ , the discrete time signal  $x[n] = e^{j\omega_0 n}$  is periodic signal with period  $N$ ?

**Answer: Deleted**

**Question Number : 58 Question Id : 2310981258**

A medium wave radio transmitter operating at a wavelength of 496 meters has a tower antenna height of 124 meters. What is the radiation resistance of the antenna?

**Answer:**

50  $\Omega$

**Question Number : 65 Question Id : 2310981265**

Let  $G = 3xy^2ax + 2zay$ . Given an initial point  $P(2, 1, 1)$  and a final point  $Q(4, 3, 1)$ , find  $\int G \cdot dL$  using the straight line:  $y = x - 1, z = 1$ .

**Answer: Deleted**

**Question Number : 84 Question Id : 2310981284**

Out of the following Linear Shift Invariant (LSI) systems, which one is non-causal?

**Answer:**

$$h[n] = u[n+4]$$

$$h[n] = \delta[n+3]$$

**Question Number : 90 Question Id : 2310981290**

A cylindrically-shaped section of n-type silicon has 2 mm length and  $0.2 \text{ mm}^2$  cross-sectional area. Calculate its resistivity when it is purely intrinsic material.

**Answer: Deleted**

**Question Number : 98 Question Id : 2310981298**

The main purpose of oxidation in the IC fabrication process using silicon is:

**Answer: Deleted**

**Question Number : 101 Question Id : 2310981301**

Within Fresnel diffraction range, the minimum resolvable feature size is of the order of \_\_\_\_\_ when a proximity exposure system is operating with a  $10\ \mu\text{m}$  gap and a light source with a wavelength of  $\lambda = 365\ \text{nm}$ .

**Answer: Deleted**

**Question Number : 103 Question Id : 2310981303**

One CMOS capacitance can store \_\_\_\_\_ bit(s) of digital information.

**Answer: Deleted**

**Question Number : 108 Question Id : 2310981308**

At room temperature the concentrations of  $\text{H}^+$  and  $\text{OH}^-$  ions in equilibrium are:  $[\text{H}^+] = [\text{OH}^-] \approx 6 \times 10^{-8}\ \text{cm}^{-3}$  in water. The diffusivity  $D$  of  $\text{H}^+$  ions is  $9.3 \times 10^{-9}\ \text{m}^2\text{sec}^{-1}$ . Calculate the mobility  $\mu$  of  $\text{H}^+$  ions.

**Answer: Deleted**

**Question Number : 117 Question Id : 2310981317**

In typical circuits, the stabilisation factor  $S = \Delta I_C / \Delta I_{CO}$  is:

**Answer:**

$\ll 1$

**Question Number : 126 Question Id : 2310981326**

The transfer function  $T(s)$  of a single OPAMP inverting mode filter that has a capacitance  $C$  and resistance  $R$  in the feedback path and an input resistance  $R$  is:

**Answer: Deleted**

**Question Number : 129 Question Id : 2310981329**

In a DC voltage regulator using LM117 IC, if the feedback resistance connected across  $V_{OUT}$  and ADJ terminals  $R_1$  is  $240\ \Omega$  and the resistance connected between ADJ and ground  $R_2$  is  $4.7\ \text{k}\Omega$ , then the regulated output voltage is:

**Answer: Deleted**