

Telangana State Council Higher Education

Notations :

- Options shown in **green** color and with  icon are correct.
- Options shown in **red** color and with  icon are incorrect.

Question Paper Name :Electronics and Communication Engineering
29th May 2026 Shift 1**Subject Name :**

Electronics and Communication Engineering

Creation Date :

2026-05-29 12:45:11

Duration :

120

Total Marks :

120

Display Marks:

Yes

Share Answer Key With Delivery Engine :

Yes

Actual Answer Key :

Yes

Change Font Color :

No

Change Background Color :

No

Change Theme :

No

Help Button :

No

Show Reports :

No

Show Progress Bar :

No

Electronics and Communication Engineering

Group Number :

1

Group Id :

10513137

Group Maximum Duration :

0

Group Minimum Duration :

120

Show Attended Group? :

No

Edit Attended Group? :

No

Break time :

0

Group Marks :

120

Mathematics

Section Id :

10513184

Section Number :

1

Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
Section Marks :	10
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	10513184
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 1051314801 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\{[2, -3, 5], [1, \alpha, 7], [3, \beta, 3]\}$ is not a basis of the vector space $\mathbb{R}^3$, then (α, β) lies on the locus

Options :

1. ✖ $x^2 + y = 5$
2. ✖ $y^2 + x = 4$
3. ✔ $x + y + 6 = 0$
4. ✖ $x^2 + y^2 = 16$

Question Number : 2 Question Id : 1051314802 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Consider the linear system of equations $\begin{bmatrix} 3 & -1 & 4 \\ 6 & 3 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$. In this system of

equations if x is always a fixed constant, then the system has

Options :

1. ✖ No solution
2. ✖ Infinite solutions

3. ✓ Unique solution

4. ✗ Exactly two solutions

Question Number : 3 Question Id : 1051314803 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\iint_D x^2 y \, dx \, dy$ (where D is $x^2 + y^2 \leq 16$) is

Options :

1. ✗ $2 \times \frac{4^5}{15}$

2. ✗ $\pi \times \frac{4^5}{15}$

3. ✓ 0

4. ✗ $\pi \times \frac{4^5}{25}$

Question Number : 4 Question Id : 1051314804 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\vec{V} = x^2 y \vec{i} - yz^2 \vec{j} + xyz \vec{k}$ is linear velocity of a particle in circular motion at a point $(1, 1, 1)$, then its angular velocity is

Options :

1. ✗ $-\frac{1}{2}(\vec{i} + \vec{j} + \vec{k})$

2. ✗ $\vec{0}$

3. ✓

$$\frac{1}{2}(3\bar{i} - \bar{j} - \bar{k})$$

$$4. \times \frac{1}{2}(\bar{i} + \bar{j} + \bar{k})$$

Question Number : 5 Question Id : 1051314805 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int_C \frac{(z+2)dz}{z^2 + 2z + 2}, \text{ where } C \text{ is } |z - \alpha| = 1, \alpha = \left(-1 + \frac{3}{2}i\right) \text{ is}$$

Options :

$$1. \times 0$$

$$2. \times 2\pi i$$

$$3. \checkmark \pi(1+i)$$

$$4. \times \pi(2-i)$$

Question Number : 6 Question Id : 1051314806 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\text{If the solution of } \frac{d^2y}{dt^2} = -\frac{5y}{4} + \frac{dy}{dt}, \text{ satisfying } y(0)=1 \text{ and } \left(\frac{dy}{dt}\right)_{t=0} = 0 \text{ is } y(t), \text{ then } y(\pi) =$$

Options :

$$1. \times e^{-2\pi}$$

$$2. \checkmark e^{\frac{\pi}{2}}$$

$$3. \times 5e^{-2\pi}$$

$$4. \times 4e^{\frac{\pi}{2}}$$

Question Number : 7 Question Id : 1051314807 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The differential equation $2\frac{\partial^2 z}{\partial x^2} + 5\frac{\partial^2 z}{\partial x \partial y} + 2\frac{\partial^2 z}{\partial y^2} + 7\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} = 0$ is classified as

Options :

1. ✖ Parabolic
2. ✖ Elliptic
3. ✔ Hyperbolic
4. ✖ Clairant's equation

Question Number : 8 Question Id : 1051314808 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The joint probability density function of a two-dimensional random variable (X, Y) is

$$f(x, y) = \begin{cases} 2, & 0 < x < 1, 0 < y < x \\ 0, & \text{otherwise} \end{cases} \text{ . Which of the following is correct?}$$

Options :

1. ✖ X and Y are independent
2. ✖ Marginal density function of X is $x, 0 < x < 1$
3. ✖ Marginal density function of Y is $(1-y), 0 < y < 1$
4. ✔ X and Y are not independent

Question Number : 9 Question Id : 1051314809 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If μ_1 , μ_2 and μ_3 are mean, median and mode respectively of a normal distribution, then

$$3\text{median} - 2\text{mode} =$$

Options :

1. ✓ μ_1

2. ✗ $3\mu_2$

3. ✗ $4\mu_3$

4. ✗ 0

Question Number : 10 Question Id : 1051314810 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Approximate positive root of the equation $x^2 - 7x + 9 = 0$ using Newton-Raphson method with initial guess as $x_0 = 2$ is

Options :

1. ✓ $\frac{56}{33}$

2. ✗ $\frac{12}{5}$

3. ✗ $\frac{18}{23}$

4. ✗ $\frac{1}{2}$

Electronics and Communication Engineering

Section Id :

10513185

Section Number :

2

Section type :

Online

Mandatory or Optional :

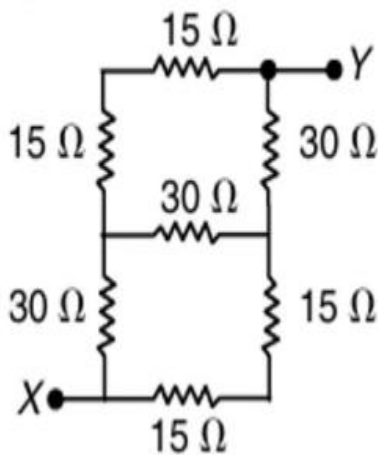
Mandatory

Number of Questions :	110
Number of Questions to be attempted :	110
Section Marks :	110
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	10513185
Question Shuffling Allowed :	Yes

Question Number : 11 Question Id : 1051314811 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equivalent resistance between the terminal points X and Y in the given circuit is

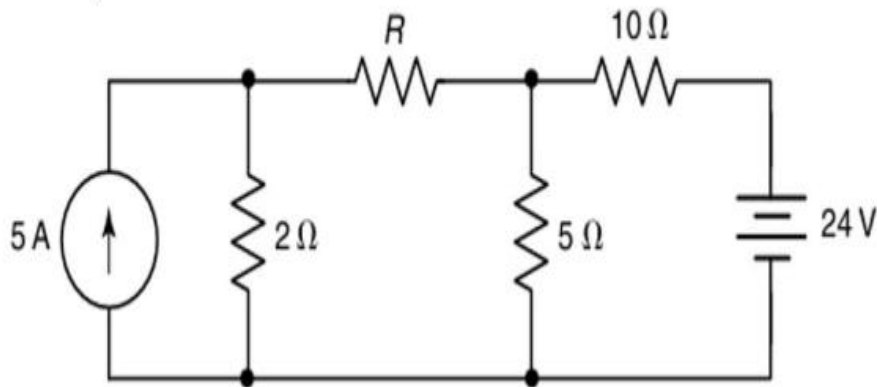


Options :

1. ✗ 15 Ω
2. ✓ 30 Ω
3. ✗ 40 Ω
4. ✗ 90 Ω

Question Number : 12 Question Id : 1051314812 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

For the given circuit during maximum power transfer, the value of R and magnitude of the power are



Options :

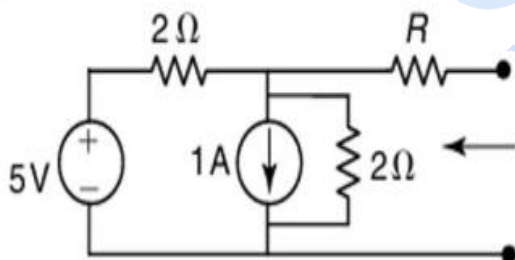
1. ✗ $5\ \Omega$ and $1\ \text{W}$
2. ✗ $15\ \Omega$ and $10\ \text{W}$
3. ✗ $2.12\ \Omega$ and $1.233\ \text{W}$
4. ✓ $5.33\ \Omega$ and $0.188\ \text{W}$

Question Number : 13 Question Id : 1051314813 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In the given circuit, if Thevenin's equivalent resistance is $2\ \Omega$ when seen from the open terminals, then the value of ' R ' is



Options :

1. ✓ $1\ \Omega$
2. ✗ $2\ \Omega$
3. ✗ $4\ \Omega$
4. ✗ $5\ \Omega$

Question Number : 14 Question Id : 1051314814 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A $10\ \Omega$ resistor, a 1-H inductor and a 1-F capacitor are connected in parallel. The combination is driven by a unit step current. Under steady-state conditions, the source current flows through

Options :

1. ✖ Resistor only
2. ✔ Inductor only
3. ✖ Capacitor only
4. ✖ Resistor, Inductor and Capacitor

Question Number : 15 Question Id : 1051314815 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The impulse response of an RL circuit is a

Options :

1. ✖ Rising exponential function
2. ✔ Decaying exponential function
3. ✖ Step function
4. ✖ Parabolic function

Question Number : 16 Question Id : 1051314816 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An RLC series circuit has $R = 1\ \Omega$, $L = 1\text{ H}$ and $C = 1\text{ F}$. Damping ratio of the circuit will be

Options :

1. ✖ Greater than unity
2. ✖ Unity
3. ✔ 0.5
4. ✖ Zero

Question Number : 17 Question Id : 1051314817 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The condition for symmetry in ABCD two port parameters is

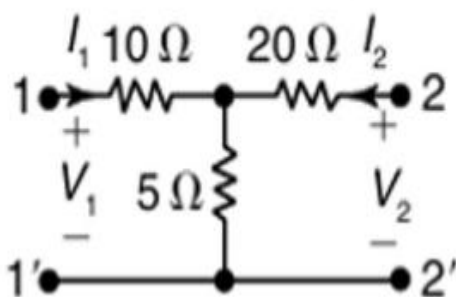
Options :

1. ✖ $A = B$
2. ✔ $A = D$
3. ✖ $B = C$
4. ✖ $B = D$

Question Number : 18 Question Id : 1051314818 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

What is the short circuit impedance at port 1 for the given two-port network?



Options :

1. ✖ 3.33Ω
2. ✖ 4Ω

3. ✓ 14Ω 4. ✗ 23.33Ω **Question Number : 19 Question Id : 1051314819 Question Type : MCQ Option Shuffling : Yes****Display Question Number : Yes****Correct Marks : 1 Wrong Marks : 0**

The form factor for dc supply voltage is always

Options :

1. ✗ Zero

2. ✓ Unity

3. ✗ Infinity

4. ✗ Any value between 0 and 1

Question Number : 20 Question Id : 1051314820 Question Type : MCQ Option Shuffling : Yes**Display Question Number : Yes****Correct Marks : 1 Wrong Marks : 0**The Fourier transform of a function $f(at)$ is given by**Options :**1. ✗ $f(at) = aF(\omega)$ 2. ✗ $f(at) = 2aF(\omega)$ 3. ✓ $f(at) = \left(\frac{1}{a}\right)F\left(\frac{\omega}{a}\right)$ 4. ✗ $f(at) = \left(\frac{2}{a}\right)F(\omega)$ **Question Number : 21 Question Id : 1051314821 Question Type : MCQ Option Shuffling : Yes****Display Question Number : Yes**

Correct Marks : 1 Wrong Marks : 0

If $f(t)$ is a periodic waveform with even symmetry, then its Fourier series expansion does not contain

Options :

1. ✓ Sine terms
2. ✗ Cosine terms
3. ✗ Odd harmonics
4. ✗ Even harmonics

Question Number : 22 Question Id : 1051314822 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Fourier transform of a signum function is

Options :

1. ✗ $j\pi f$
2. ✓ $\frac{1}{j\pi f}$
3. ✗ $j\pi f + a$
4. ✗ $\frac{1}{j\pi f + a}$

Question Number : 23 Question Id : 1051314823 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A square-law system is/has

Options :

1. ✗ Invertible
2. ✓ Not invertible

3. ✖ Distinct inputs and must produce distinct outputs
4. ✖ $x(t)$ and $x(-t)$ produce distinct outputs

Question Number : 24 Question Id : 1051314824 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the input is $x[n] = -u[n] + 2u[n-3] - u[n-6]$ and impulse response is $h[n] = u[n+1] - u[n-10]$ of a LTI system, then the output of this system $y[n]$ in the interval $5 \leq n \leq 9$ is

Options :

1. ✔ $y[n] = 0$
2. ✖ $y[n] = -[n+2]$
3. ✖ $y[n] = n-4$
4. ✖ $y[n] = n-9$

Question Number : 25 Question Id : 1051314825 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Find the inverse Fourier Transform of $X(j\omega) = \frac{j\omega + 1}{(j\omega)^2 + 5j\omega + 6}$?

Options :

1. ✖ $2e^3tu(t) + e^{2t}u(t)$
2. ✖ $3e^{(-3t)}u(t) - 2e^{(-2t)}u(t)$
3. ✖ $2e^{(-2t)}u(t) + 3e^{(-3t)}u(t)$
4. ✔ $2e^{(-3t)}u(t) - e^{(-2t)}u(t)$

Question Number : 26 Question Id : 1051314826 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The Fourier Transform of $\frac{d}{dt}(e^{(-at)}u(t))$ is

Options :

1. ✖ $\delta(t)$

2. ✖ $-ae^{-at}u(t)$

3. ✖ $\frac{a}{a + j\omega}$

4. ✔ $\frac{j\omega}{a + j\omega}$

Question Number : 27 Question Id : 1051314827 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Overlap in the shifted replicas of the original spectrum after sampling is termed

Options :

1. ✖ Offset

2. ✖ Bandwidth

3. ✔ Aliasing

4. ✖ Anti-aliasing

Question Number : 28 Question Id : 1051314828 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The Fourier Transform of the sampled signal is given by

Options :

1. ✖ The multiplication of shifted versions of the impulse signals
2. ✖ The original signal's Fourier Transform
3. ✖ A finite sum of unit step signal's Fourier Transform
4. ✔ An infinite sum of shifted versions of the original signal's Fourier Transform

Question Number : 29 Question Id : 1051314829 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Determine the conditions on the sampling interval 'T' such that

$x(t) = \frac{\cos(2\pi t)\sin(\pi t)}{\pi t} + \frac{2\sin(6\pi t)\sin(2\pi t)}{\pi t}$ is uniquely represented by the discrete time sequence $x[n] = x[nT]$?

Options :

1. ✖ $\frac{1}{2}$
2. ✖ $\frac{1}{6}$
3. ✔ $\frac{1}{8}$
4. ✖ $\frac{1}{12}$

Question Number : 30 Question Id : 1051314830 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

N point DFT using FFT algorithms (a radix of 2) require the following complex multiplication?

Options :

1. ✖ N

2. ✖ $2N$

3. ✖ $\log_2(N)$

4. ✔ $N \log_2(N)$

Question Number : 31 Question Id : 1051314831 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A relaxed linear time-invariant system with impulse response $h(n) = a^n u(n)$, $|a| < 1$, when the input is a unit step sequence, $x(n) = u(n)$, then the output $y(\infty)$ of the system is

Options :

1. ✖ $\frac{1+a^{(n+1)}}{1+a}$

2. ✖ $\frac{1-a^{(n-1)}}{1+a}$

3. ✖ $\frac{1-a^{(n-1)}}{1-a}$

4. ✔ $\frac{1}{1-a}$

Question Number : 32 Question Id : 1051314832 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Determine the z-transform of the signal $x(n) = a^n (\sin \omega_0 n) u(n)$?

Options :

1. ✖ $\frac{az^{-1} \cos \omega_0}{1 - 2az^{-1} \sin \omega_0 - a^2 z^{-2}} \quad |Z| > |a|$

2. ✖ $\frac{az^{-1} \cos \omega}{1 + 2az^{-1} \cos \omega_0 - a^2 z^{-2}} \quad |Z| < |a|$

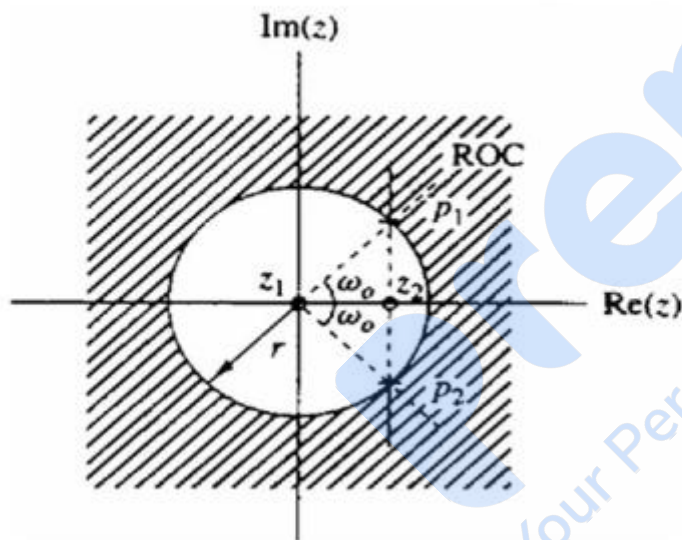
3. ✔ $\frac{az^{-1} \sin \omega_0}{1 - 2az^{-1} \cos \omega_0 + a^2 z^{-2}} \quad |Z| > |a|$

4. ✖ $\frac{az^{-1} \sin \omega_0}{1 - 2az^{-1} \cos \omega - a^2 z^{-2}} \quad |Z| < |a|$

Question Number : 33 Question Id : 1051314833 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Determine the z-transform of the given pole-zero plot?



Options :

1. ✖ $X(z) = G \frac{(z + r \cos \omega_0)}{(z - re^{j\omega_0})(z - re^{-j\omega_0})} \quad |Z| < r$

2. ✖ $X(z) = G \frac{(z + r \cos \omega_0)}{(z + re^{j\omega_0})(z - re^{-j\omega_0})} \quad |Z| < r$

3. ✔ $X(z) = G \frac{z(z - r \cos \omega_0)}{(z - re^{j\omega_0})(z - re^{-j\omega_0})} \quad |Z| > r$

4. ✖
$$X(z) = G \frac{z(z + r \cos \omega_0)}{(z + re^{j\omega_0})(z - re^{-j\omega_0})} \quad |Z| > r$$

Question Number : 34 Question Id : 1051314834 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A linear time-invariant system is characterized by the system function

$$H(z) = \frac{3 - 4z^{-1}}{1 - 3.5z^{-1} + 1.5z^{-2}}$$

Which of the following is not correct?

Options :

1. ✖ System is stable in $\frac{1}{2} < |z| < 3$
2. ✖ System is unstable in $|z| > 3$
3. ✔ System is causal, its ROC is $|z| > 3$ and system is stable
4. ✖ System is anti causal, its ROC is $|z| < \frac{1}{2}$ and system is unstable

Question Number : 35 Question Id : 1051314835 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If all the frequency components of the input signal undergo the same time delay, then the value of the group delay of the system is

Options :

1. ✖ Zero
2. ✖ Unity
3. ✔ Constant
4. ✖ Infinity

Question Number : 36 Question Id : 1051314836 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A typical resistance value for a 1-cubic centimeter sample of semiconductor is

Options :

1. ✓ $10 \Omega / cm^3$
2. ✗ $10^{-6} \Omega / cm^3$
3. ✗ $10^{-16} \Omega / cm^3$
4. ✗ $10^{-14} \Omega / cm^3$

Question Number : 37 Question Id : 1051314837 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The charge carriers move gradually from the region of high carrier density to low carrier density constitutes an electric current is

Options :

1. ✗ Drift current
2. ✓ Diffusion current
3. ✗ Leakage current
4. ✗ Current density

Question Number : 38 Question Id : 1051314838 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The forward resistance for silicon diode carrying a current of 20 mA is

Options :

1. ✗ 15Ω

2. ✓ 35Ω 3. ✗ 50Ω 4. ✗ $20 \text{ k}\Omega$

Question Number : 39 Question Id : 1051314839 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The diode current equation is

Options :

1. ✓ $I_o \left(e^{\frac{V}{\eta V_T}} - 1 \right)$

2. ✗ $I_o e^{\frac{-V}{\eta V_T}}$

3. ✗ $I_o \left(e^{\frac{-V}{\eta V_T}} + 1 \right)$

4. ✗ I_o

Question Number : 40 Question Id : 1051314840 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The maximum time for the diode to switch from on to off is called

Options :

1. ✗ Rise time

2. ✗ Fall time

3. ✗ Saturation time

4. ✓ Reverse recovery time

Question Number : 41 Question Id : 1051314841 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Find the value of emitter current for a transistor with $\alpha_{dc} = 0.98$ and $I_{CBO} = 5 \mu A$, when the base current is measured as $100 \mu A$?

Options :

- 1. ✓ 5.25 mA
- 2. ✗ 5.15 mA
- 3. ✗ 4.9 mA
- 4. ✗ 0.25 mA

Question Number : 42 Question Id : 1051314842 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The region of the V-I characteristic of JFET where, I_D (drain current) is fairly constant is, referred as

Options :

- 1. ✗ Cut-off
- 2. ✓ Pinch-off
- 3. ✗ Active
- 4. ✗ Saturation

Question Number : 43 Question Id : 1051314843 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For enhancement MOSFET, the gate-source voltage must have

Options :

1. ✖ Positive
2. ✖ Negative
3. ✔ Same polarity as the drain supply
4. ✖ Opposite polarity as the drain supply

Question Number : 44 Question Id : 1051314844 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The incorrect statement with respect to thin-film integrated circuits is

Options :

1. ✖ Depositing film of conducting material on the surface of a glass
2. ✔ Silk-screen printing techniques are employed to create the desired circuit pattern
3. ✖ Capacitors are produced by sandwiching a film of insulating oxide between two conducting films
4. ✖ Inductors are made by depositing a spiral formation of film

Question Number : 45 Question Id : 1051314845 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In discrete transistors the substrate is normally used as

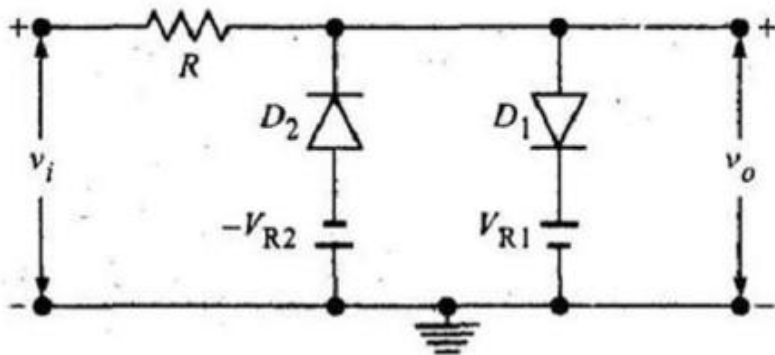
Options :

1. ✖ Emitter
2. ✔ Collector
3. ✖ Base
4. ✖ Bias supply

Question Number : 46 Question Id : 1051314846 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is correct with reference to the following circuit?



Options :

1. ✗ $-V_{R2} < v_i < V_{R1} \rightarrow D_1 \text{ OFF}, D_2 \text{ ON} \rightarrow v_o = V_{R1}$
2. ✗ $v_i < V_{R1} \rightarrow D_1 \text{ ON}, D_2 \text{ OFF} \rightarrow v_o = V_{R1}$
3. ✗ $v_i < V_{R2} \rightarrow D_1 \text{ OFF}, D_2 \text{ OFF} \rightarrow v_o = v_i$
4. ✓ $-V_{R2} > v_i \rightarrow D_1 \text{ OFF}, D_2 \text{ ON} \rightarrow v_o = -V_{R2}$

Question Number : 47 Question Id : 1051314847 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In Emitter current bias, if $R_1 \parallel R_2$ is very much larger than R_E , then the circuit performance becomes like

Options :

1. ✗ Remains in the same bias circuit
2. ✓ Fixed current bias circuit
3. ✗ Collector to base bias circuit
4. ✗ Voltage divider bias circuit

Question Number : 48 Question Id : 1051314848 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Match the following

A	Small signal amplifier	I	Amplify steady-state input voltage
B	DC amplifier	II	Large signal amplifier
C	Operational amplifier	III	Pre-amplifier
D	Power amplifier	IV	IC amplifiers

Options :

1. ✖ A – II, B – IV, C – I, D – III

2. ✖ A – IV, B – III, C – II, D – I

3. ✔ A – III, B – I, C – IV, D – II

4. ✖ A – I, B – II, C – III, D – IV

Question Number : 49 Question Id : 1051314849 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The non-inverting amplifier circuit behaves very similar to the voltage follower circuit except that

Options :

1. ✔ Only a portion of output is fed back

2. ✖ High input impedance

3. ✖ Low output impedance

4. ✖ Very little voltage drop across R_1

Question Number : 50 Question Id : 1051314850 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Class AB operation is often used in power amplifiers in order to

Options :

1. ✓ overcome a cross over distortion
2. ✗ decrease distortion
3. ✗ increase distortion
4. ✗ introduce non-linearity

Question Number : 51 Question Id : 1051314851 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Calculate the circuit output resistance in the common drain amplifier with

$$r_d = 100 \text{ k}\Omega, g_m = 990 \text{ }\mu\text{S} \text{ and } R_L = 10 \text{ k}\Omega$$

Options :

1. ✗ 322 Ω
2. ✗ 332 Ω
3. ✓ 990 Ω
4. ✗ 10k Ω

Question Number : 52 Question Id : 1051314852 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Under steady-state conditions, the clamping theorem states that

Options :

1. ✓ $\frac{A_f}{A_r} = \frac{R_f}{R}$

2. ✗ $\frac{A_r}{A_f} = \frac{R_f}{R}$

3. ✗

$$\frac{A_f}{A_r} = \frac{R}{R_f}$$

$$4. \times \frac{A_f}{A_r} = 1$$

Question Number : 53 Question Id : 1051314853 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The correct option with respect to IC 723 general purpose regulator is

Options :

1. ☐ Inherently low currents
2. ☒ Have in-built thermal protection
3. ☐ No short circuit current limits
4. ☐ Wide range of both positive or negative regulated voltage

Question Number : 54 Question Id : 1051314854 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In IC 555 timer, three $5\text{ k}\Omega$ internal resistors act as voltage divider, which provides bias voltage to the upper comparator and to the lower comparator in the order of (in V_{cc})

Options :

$$1. \checkmark \frac{2}{3}, \frac{1}{3}$$

$$2. \times \frac{1}{3}, \frac{1}{3}$$

$$3. \times \frac{1}{3}, \frac{2}{3}$$

$$4. \times$$

$$\frac{2}{5}, \frac{1}{5}$$

Question Number : 55 Question Id : 1051314855 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The collector of the leading transistor connected to the emitter of the following transistor configuration is called

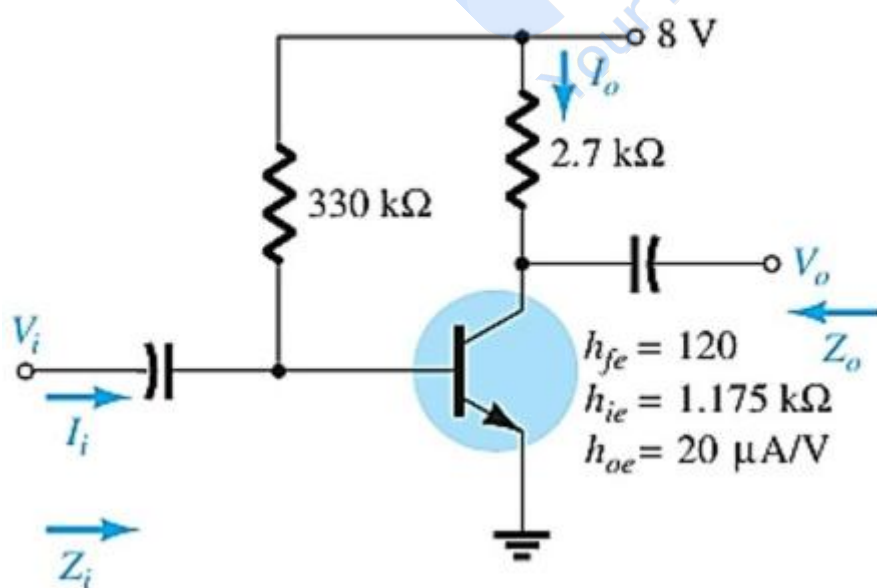
Options :

1. ✖ Emitter follower amplifier
2. ✖ Common emitter amplifier
3. ✖ Cascade amplifier
4. ✔ Cascode amplifier

Question Number : 56 Question Id : 1051314856 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A_I in the given circuit is?



Options :

1. ✖ 50

2. ✖ 100

3. ✔ 120

4. ✖ 121

Question Number : 57 Question Id : 1051314857 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The maximum efficiency of a class A series-fed amplifier is

Options :

1. ✔ 25%

2. ✖ 50%

3. ✖ 78.5%

4. ✖ 82.3%

Question Number : 58 Question Id : 1051314858 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The required current gain in a transistor Phase-shift oscillator is

Options :

1. ✖ $h_{fe} > 29 + 23 \frac{R_c}{R} + 4 \frac{R}{R_c}$ 2. ✖ $h_{fe} < 29 + 23 \frac{R_c}{R} + 4 \frac{R}{R_c}$ 3. ✔ $h_{fe} > 23 + 29 \frac{R}{R_c} + 4 \frac{R_c}{R}$ 4. ✖ $h_{fe} < 23 + 29 \frac{R}{R_c} + 4 \frac{R_c}{R}$

Question Number : 59 Question Id : 1051314859 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A dc voltage supply provides 60 V when the output is unloaded. When connected to a load, the output drops to 56 V. Determine the value of voltage regulation?

Options :

1. ✖ 4.5 %

2. ✔ 7.1 %

3. ✖ 14 %

4. ✖ 15 %

Question Number : 60 Question Id : 1051314860 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If an amplifier with gain of -1000 and feedback of $\beta = -0.1$ has a gain change of 20% due to temperature, calculate the change in gain of the feedback amplifier?

Options :

1. ✔ 0.2 %

2. ✖ 0.1 %

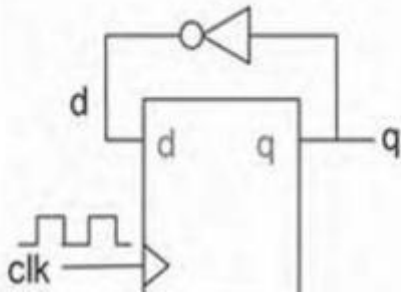
3. ✖ 0.001%

4. ✖ 0.0001%

Question Number : 61 Question Id : 1051314861 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The following circuit works like a



Options :

1. ✖ D Flip-flop
2. ✖ T Flip-flop
3. ✔ Frequency divider
4. ✖ Inverter

Question Number : 62 Question Id : 1051314862 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The SRAM from a memory-read perspective, is indeed a combinational circuit because

Options :

1. ✖ Its next state depends on its present state
2. ✔ A data retrieval is not affected by previous data retrievals
3. ✖ It is storage element
4. ✖ It operates in sequential fashion

Question Number : 63 Question Id : 1051314863 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The BCD code of decimal number 255 is

Options :

1. ✔ 0010 0101 0101

2. ✖ 1111 1111 1110

3. ✖ 1111 1111 1111

4. ✖ 0111 1111 1111

Question Number : 64 Question Id : 1051314864 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Using 8-bit numbers, find the 2's complement of -128?

Options :

1. ✖ 01111111

2. ✖ 11000111

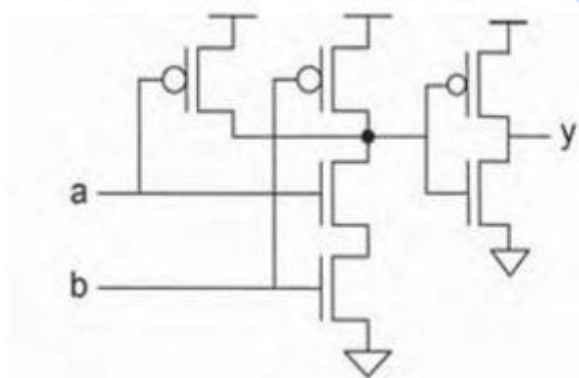
3. ✖ 10000001

4. ✔ 10000000

Question Number : 65 Question Id : 1051314865 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The following circuit is equivalent of



Options :

1. ✔ AND Gate

2. ✖ OR Gate

3. ✖ NOR Gate

4. ✖ NAND Gate

Question Number : 66 Question Id : 1051314866 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Modulo-2 adder (without carry-out) works like

Options :

1. ✖ OR gate

2. ✔ XOR gate

3. ✖ XNOR gate

4. ✖ XNAND gate

Question Number : 67 Question Id : 1051314867 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The logical equation of tri-state buffer is

(E = enable, Z = high impedance, X = input, Y = output)

Options :

1. ✔ $Y = E'Z + EX$

2. ✖ $Y = E'Z' + EX'$

3. ✖ $Y = Z' + EX$

4. ✖ $Y = EZ + X$

Question Number : 68 Question Id : 1051314868 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The modulo 2^N counter consist of the following number of states and flip-flops are respectively

Options :

1. ✖ $2N-1$ and $N-1$
2. ✖ 2^{2N} and $N-1$
3. ✖ 2^{N-1} and $N-1$
4. ✔ 2^N and N

Question Number : 69 Question Id : 1051314869 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Simplify the Boolean expression $ab' + bc + ac$.

Options :

1. ✔ $ab' + bc$
2. ✖ $ab' + ac$
3. ✖ $bc + ac$
4. ✖ $a + b + c$

Question Number : 70 Question Id : 1051314870 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

PAL devices composed of

Options :

1. ✖ Fixed array of AND gates followed by a fixed array of OR gates
2. ✖ Programmable AND and OR gate arrays
3. ✖ Fixed array of AND gates followed by a programmable array of OR gates

4. ✓ Programmable array of AND gates followed by a fixed array of OR gates

Question Number : 71 Question Id : 1051314871 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Calculate the full scale output value of an 8-bit DAC for the 0 to 10 V range?

Options :

1. ✗ 0.039 V

2. ✗ 5 V

3. ✓ 9.961 V

4. ✗ 10 V

Question Number : 72 Question Id : 1051314872 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the converter of Dual-slope ADC first integrates the analog input signal for a fixed duration, then the clock periods are

Options :

1. ✗ n

2. ✗ $n-1$

3. ✓ 2^n

4. ✗ 2^{n-1}

Question Number : 73 Question Id : 1051314873 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

TRAP is addressed by

Options :

1. ✗ 0016H

2. ✓ 0024H

3. ✗ 0033H

4. ✗ 0034H

Question Number : 74 Question Id : 1051314874 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When the following is used, the CPU is bypassed for certain data transfers?

Options :

1. ✗ Polled I/O

2. ✓ DMA

3. ✗ TRAP

4. ✗ Software Interrupts

Question Number : 75 Question Id : 1051314875 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In 8086 microprocessor, the instruction used to copy the word from the top of the stack to the flag register is

Options :

1. ✗ PUSH

2. ✗ PUSHF

3. ✗ POP

4. ✓ POPF

Question Number : 76 Question Id : 1051314876 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The damped natural frequency of an underdamped system is given by

Options :

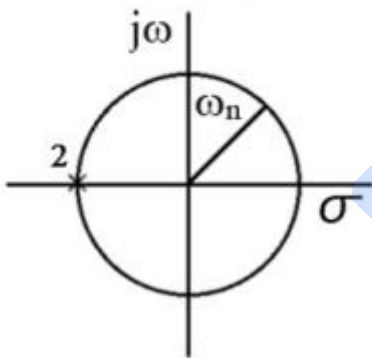
1. ✗ ω_n
2. ✗ $\omega_n \zeta^2$
3. ✗ $\omega_n \sqrt{1 + \zeta^2}$
4. ✓ $\omega_n \sqrt{1 - \zeta^2}$

Question Number : 77 Question Id : 1051314877 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The following plot shows



Options :

1. ✓ Critical damped system
2. ✗ Under damped system
3. ✗ Over damped system
4. ✗ Undamped system

Question Number : 78 Question Id : 1051314878 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The range of steady state value for the rise time of underdamped system is

Options :

1. ✖ 0 to 90 %
2. ✖ 10 to 90%
3. ✔ 0 to 100%
4. ✖ 10 to 100%

Question Number : 79 Question Id : 1051314879 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\lim_{s \rightarrow 0} s^2 G(s)$ defines

Options :

1. ✖ Positional error constant
2. ✖ Velocity error coefficient
3. ✔ Acceleration error constant
4. ✖ Mean square error coefficient

Question Number : 80 Question Id : 1051314880 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The steady state error for a type 1 system with input of $\frac{At^2}{2}u(t)$ is

Options :

1. ✖ 0
2. ✖ $\frac{1}{2}$

3. ✖ 1

4. ✔ ∞

Question Number : 81 Question Id : 1051314881 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The control system with single pole at origin is

Options :

1. ✖ Unstable

2. ✖ Stable

3. ✔ Marginally stable

4. ✖ Absolutely stable

Question Number : 82 Question Id : 1051314882 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For the system $G(s)H(s) = \frac{K(s+a^2)}{(s+b)^2}$, the break point is

Options :

1. ✖ a,b

2. ✔ -a, -b

3. ✖ $\sqrt{ab}$ 4. ✖ $-b \pm \sqrt{b^2 - ab}$

Question Number : 83 Question Id : 1051314883 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The incorrect option for a Closed loop control system output is

Options :

1. ✖ Decrease the effect of noise
2. ✖ Improves the overall stability
3. ✖ Sensitivity is reduced
4. ✔ Independent of variation in feedback parameter

Question Number : 84 Question Id : 1051314884 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The characteristic polynomial of a second order system is $s^3 + 2s^2 + 4s + K$.
The system is marginally stable for

Options :

1. ✖ $K = 0$
2. ✔ $K = 8$
3. ✖ $0 < K < 4$
4. ✖ $0 < K < 8$

Question Number : 85 Question Id : 1051314885 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The root locus approaches straight lines as asymptotes approaches

Options :

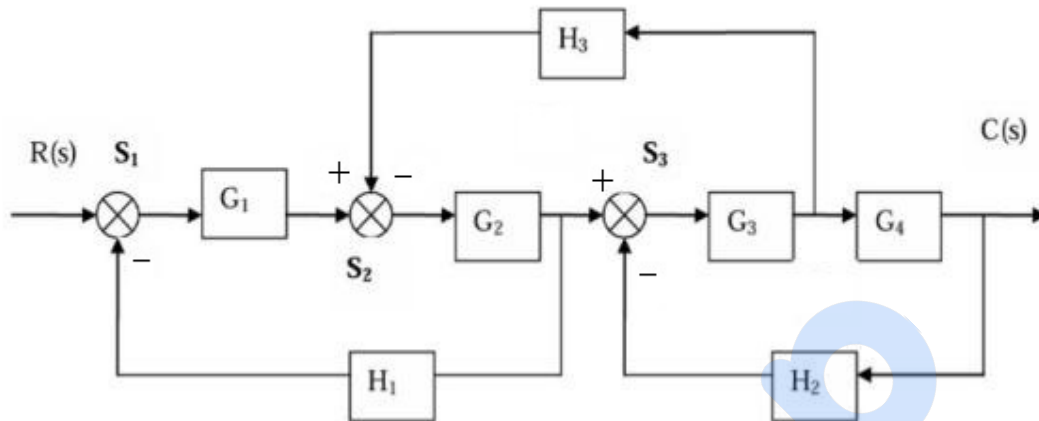
1. ✖ Zero
2. ✖ Unity
3. ✔ Infinity

4. ✖ jw axis

Question Number : 86 Question Id : 1051314886 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Determine the transfer function $C(s)/R(s)$ of the system shown below?

Options :

1. ✔ $\frac{G_1 G_2 G_3 G_4}{(1 + G_1 G_2 H_1)(1 + G_3 G_4 H_2) + G_2 G_3 H_3}$
2. ✖ $\frac{G_1 G_4}{(1 + G_1 G_2 H_1 H_2) + (1 + G_2 G_3 G_4 H_3)}$
3. ✖ $\frac{G_1 G_3 G_4}{(1 + G_1 G_2 H_1)(1 + G_3 G_4) + (1 + G_2 G_3 H_2)}$
4. ✖ $\frac{G_1 G_2 G_3}{(1 + G_1 G_2 H_1)(1 + G_3 G_4) + (G_2 G_3 H_3 + G_4)}$

Question Number : 87 Question Id : 1051314887 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For the following Routh's array, the system is

$$\begin{array}{c|cc}
 s^3 & 1 & 0 \\
 s^2 & 2 & 9 \\
 s^1 & -4.5 & \\
 s^0 & 9 &
 \end{array}$$

Options :

1. ✓ Unstable
2. ✗ Stable
3. ✗ Marginally stable
4. ✗ Conditionally stable

Question Number : 88 Question Id : 1051314888 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Error constants of a system are measure of

Options :

1. ✗ Relative stability
2. ✗ Transient state response
3. ✓ Steady state response
4. ✗ Marginal stability

Question Number : 89 Question Id : 1051314889 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The following are the effects of a phase-lead compensation except

Options :

1. ✗ Crossover frequency is increased

2. ✓ Rise time is increased
3. ✗ Settling time is reduced
4. ✗ More damping

Question Number : 90 Question Id : 1051314890 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The incorrect statement with respect to Bode Plots is

Options :

1. ✗ Gain margin and phase margin both are positive then system is stable
2. ✗ Gain margin is measured above the 0dB axis, then system is unstable
3. ✓ If the phase margin is measured below the -180° axis, the system is stable
4. ✗ Absolute and relative stability of only minimum-phase system can be determined

Question Number : 91 Question Id : 1051314891 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The total power in the two side-frequencies of the resulting AM is one third of the total power in the modulated wave when the modulation index is

Options :

1. ✗ 25 %
2. ✗ 33 %
3. ✓ 100 %
4. ✗ 66 %

Question Number : 92 Question Id : 1051314892 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The quadrature null effect of the coherent detector occur at

Options :

1. ✖ $\phi = 0$

2. ✔ $\phi = \pm \frac{\pi}{2}$

3. ✖ $\phi = \pm \pi$

4. ✖ $\phi = 2\pi$

Question Number : 93 Question Id : 1051314893 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

To develop the time-domain description of SSB modulation, the required mathematical tool is known as

Options :

1. ✖ Fourier transform

2. ✔ Hilbert transform

3. ✖ Discrete Cosine transform

4. ✖ Sine transform

Question Number : 94 Question Id : 1051314894 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In the transmission of television signals in practice, a controlled amount of carrier is added to the VSB modulated signal. This is done to use

Options :

1. ✔ An envelop detector for demodulation

2. ✖ A square wave detector for demodulation

3. ✖ A square wave detector for modulation
4. ✖ A product modulation for modulation

Question Number : 95 Question Id : 1051314895 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Prior to sampling, the type of filter used to attenuate high frequency components of the signal that lie outside the band of interest is

Options :

1. ✖ Lowpass aliasing
2. ✖ Highpass aliasing
3. ✔ Lowpass anti-aliasing
4. ✖ Highpass anti-aliasing

Question Number : 96 Question Id : 1051314896 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is used to correct the aperture effect due to flat-top sampling in the sample-and-hold circuit of PAM demodulation?

Options :

1. ✖ Amplifier
2. ✖ Low pass filter
3. ✖ Band pass filter
4. ✔ Equalizer

Question Number : 97 Question Id : 1051314897 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A FDM system is used to multiplex 24 independent voice signals. SSB modulation is used for the transmission. Given that each voice signal is allotted a bandwidth of 4 kHz, calculate the overall transmission bandwidth of the channel?

Options :

1. ✗ 6 kHz
2. ✗ 8 kHz
3. ✓ 96 kHz
4. ✗ 192 kHz

Question Number : 98 Question Id : 1051314898 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A TDM system is used to multiplex four independent voice signals each sampled at the rate of 8 kHz using PAM. The system incorporates a synchronizing pulse train for its proper operation. Calculate the transmission bandwidth?

Options :

1. ✗ 8 kHz
2. ✗ 16 kHz
3. ✗ 32 kHz
4. ✓ 40 kHz

Question Number : 99 Question Id : 1051314899 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

What are the conditions for distortion less transmission through a system?

Options :

1. ✗ Gain is linear and phase is constant
2. ✗ Gain and phase should be linear

- 3. ✖ Gain and phase must be constant
- 4. ✔ Gain must be constant and phase should be linear

Question Number : 100 Question Id : 1051314900 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A random process is stationary

Options :

- 1. ✔ If all statistical properties do not change with time
- 2. ✖ If the future values of any sample function can be predicted from present values only
- 3. ✖ Future values cannot be predicted
- 4. ✖ If the future values of any sample function can be predicted from past values only

Question Number : 101 Question Id : 1051314901 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The random process $X(t) = A \cos(\omega_0 t + \theta)$ is wide-sense stationary, where A and ω_0 are constants and θ is a uniformly distributed random variable on the interval $(0, 2\pi)$.

Then the mean value is

Options :

- 1. ✔ 0
- 2. ✖ 1
- 3. ✖ π
- 4. ✖ ∞

Question Number : 102 Question Id : 1051314902 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The following are properties of auto correlation except

Options :

1. ✖ $|R_{xx}(\tau)| \leq R_{xx}(0)$
2. ✖ $|R_{xx}(-\tau)| = R_{xx}(\tau)$
3. ✔ $|R_{xx}(\tau)| = E[x(t)]$

If $x(t)$ has a periodic component, then $R_{xx}(\tau)$ will have a periodic component with

4. ✖ the same period

Question Number : 103 Question Id : 1051314903 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A receiver connected to an antenna whose resistance is 50Ω has an equivalent noise resistance of 30Ω . Calculate the receiver's noise figure?

Options :

1. ✖ 0.6
2. ✖ 1.0
3. ✔ 1.6
4. ✖ 2.0

Question Number : 104 Question Id : 1051314904 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is not correct if the intermediate frequency is too high?

Options :

1. ✖ Poor selectivity
2. ✖

Poor adjacent channel rejection

3. ✖ Increase tracking difficulties
4. ✔ Poor image frequency rejection

Question Number : 105 Question Id : 1051314905 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The problem of reducing the gain of receiver for weak signals is avoided by

Options :

1. ✖ No AGC
2. ✖ Ideal AGC
3. ✖ Simple AGC
4. ✔ Delayed AGC

Question Number : 106 Question Id : 1051314906 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In communication receivers, the filter used to reduce receiver gain at some specific frequency is

Options :

1. ✖ Low pass
2. ✖ High pass
3. ✖ Band pass
4. ✔ Notch

Question Number : 107 Question Id : 1051314907 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Foster-Seeley discriminator along with amplitude limiter is called

Options :

1. ✖ Envelop detector
2. ✔ Ratio detector
3. ✖ Balanced modulator
4. ✖ Square-law modulator

Question Number : 108 Question Id : 1051314908 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A four level PAM has a input data rate of 2400 bits/s, then the symbol rate is

Options :

1. ✖ 600 symbols/s
2. ✔ 1200 symbols/s
3. ✖ 2400 symbols/s
4. ✖ 9600 symbols/s

Question Number : 109 Question Id : 1051314909 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Match the following

A	ASK	I	$S_i(t) = \sqrt{\frac{2E}{T}} \cos(\omega_i t + \phi), i = 1, 2, \dots, M \quad 0 \leq t \leq T$
B	APK	II	$S_i(t) = \sqrt{\frac{2E_i(t)}{T}} \cos(\omega_0 t + \phi), i = 1, 2, \dots, M \quad 0 \leq t \leq T$
C	PSK	III	$S_i(t) = \sqrt{\frac{2E_i(t)}{T}} \cos(\omega_0 t + \phi_i(t)), i = 1, 2, \dots, M \quad 0 \leq t \leq T$
D	FSK	IV	$S_i(t) = \sqrt{\frac{2E}{T}} \cos(\omega_0 t + 2\pi i / M), i = 1, 2, \dots, M \quad 0 \leq t \leq T$

Options :

1. ✖ A – IV, B – I, C – II, D – III
2. ✖ A – III, B – II, C – I, D – IV
3. ✔ A – II, B – III, C – IV, D – I
4. ✖ A – I, B – IV, C – III, D – II

Question Number : 110 Question Id : 1051314910 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the rows of channel matrix are all equal to each other, then the channel capacity is

Options :

1. ✔ 0
2. ✖ 1
3. ✖ ∞
4. ✖ Equal to bandwidth of channel

Question Number : 111 Question Id : 1051314911 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Gauss's law for magnetic fields is

Options :

1. ✖ $\nabla \cdot \mathbf{E} = 0$
2. ✖ $\nabla \cdot \mathbf{H} = 0$
3. ✔ $\nabla \cdot \mathbf{B} = 0$
4. ✖ $\nabla \cdot \mathbf{D} = 0$

Question Number : 112 Question Id : 1051314912 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Identify the polarisation of the wave given, $E_x = 2 \cos \omega t$, $E_y = 2 \sin \omega t$ and the phase difference is $+90^\circ$.

Options :

1. ✖ Left hand circularly polarized
2. ✔ Right hand circularly polarized
3. ✖ Left hand elliptically polarized
4. ✖ Right hand elliptically polarized

Question Number : 113 Question Id : 1051314913 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The characteristic impedance of the medium is

Options :

1. ✖ 120π
2. ✔ $120\pi \left(\frac{\mu_r}{\epsilon_r} \right)$

3. ✖ $\mu_r \in_r$

4. ✖ $\frac{\mu_r}{\in_r}$

Question Number : 114 Question Id : 1051314914 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The depth of penetration decreases, if

Options :

1. ✖ Conductivity decreases
2. ✖ Relative permeability decreases
3. ✔ Frequency increases
4. ✖ Phase velocity decreases

Question Number : 115 Question Id : 1051314915 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Snell's law states that

(n_1 is the index of refraction of the first medium and n_2 is that of second, θ_r is the angle of refraction and θ_i is angle of incidence)

Options :

1. ✖ $n_1 \sin \theta_i = 0$
2. ✖ $n_2 \sin \theta_r = 0$
3. ✔ $n_2 \sin \theta_r = n_1 \sin \theta_i$
4. ✖ $n_2 \sin \theta_r = -n_1 \sin \theta_i$

Question Number : 116 Question Id : 1051314916 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For a lossy transmission line, the characteristic impedance does not depend on

Options :

1. ✖ Operating frequency of the line
2. ✔ Length of the line
3. ✖ Conductivity of the conductors
4. ✖ Conductivity of the dielectric separating the conductors

Question Number : 117 Question Id : 1051314917 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A rectangular waveguide with dimensions $a = 2.5$ cm, $b = 1$ cm is operating below 15 GHz. If the guide is filled with a medium characterized by $\sigma = 0$, $\epsilon = 4\epsilon_0$, $\mu_r = 1$, calculate the cutoff frequency of dominant mode?

Options :

1. ✔ 3 GHz
2. ✖ 9 GHz
3. ✖ 12 GHz
4. ✖ 15 GHz

Question Number : 118 Question Id : 1051314918 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Find the maximum gain of a $\frac{\lambda}{2}$ wire dipole operating at 30 MHz?

Options :

1. ✖ 1

2. ✓ 1.64

3. ✗ 10.23

4. ✗ 30.33

Question Number : 119 Question Id : 1051314919 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The S-parameters are used at microwave frequencies because of the following reasons, except

Options :

1. ✗ Equipment is readily available to measure total voltage and total current

2. ✗ Short and open circuits are difficult to achieve over a broad band of frequencies

3. ✗ Logical variables to use at the microwave frequencies are travelling waves

4. ✓ More stable Active devices are used at short or open circuits

Question Number : 120 Question Id : 1051314920 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The fraction of time that the transmitter is transmitting during one radar cycle is called

Options :

1. ✗ Pulse Repeating Frequency

2. ✗ Pulse Repetition Interval

3. ✗ Pulses Per Second

4. ✓ Duty Factor