

Question Paper Preview**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 30th May 2018 Shift1
Subject Name:	Electronics and Communication Engineering
Creation Date:	2018-05-30 12:38:06
Duration:	120
Total Marks:	120
Display Marks:	No
Calculator:	None
Magnifying Glass Required?:	No
Ruler Required?:	No
Eraser Required?:	No
Scratch Pad Required?:	No
Rough Sketch/Notepad Required?:	No
Protractor Required?:	No

Display Number Panel:

Yes

Group All Questions:

No

Question Number : 1 Question Id : 5113467681 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

F is a field of complex numbers. The vectors (x_1, x_2) and (y_1, y_2) in the vector space $V_2(F)$ are linearly dependent if and only if

Options :

- ✗ $x_1y_1 - x_2y_2 = 0$
- ✗ $x_1x_2 - y_1y_2 = 0$
- ✓ $x_1y_2 - x_2y_1 = 0$
- ✗ $x_1y_2 + x_2y_1 = 0$

Question Number : 2 Question Id : 5113467682 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the rank of the matrix $A = \begin{bmatrix} 1 & -2 & 3 \\ 2 & 1 & -1 \\ 6 & -2 & \lambda \end{bmatrix}$ is 2 then the value of $\lambda =$

Options :

1. ✓ $\lambda = 4$

2. ✗ $\lambda = 3$

3. ✗ $\lambda = 2$

4. ✗ $\lambda = 0$

Question Number : 3 Question Id : 5113467683 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{bmatrix} 1 & 4 \\ 1 & 2 \end{bmatrix}$, the eigen values of A are

Options :

1. ✗ 1 and 4

2. ✗ 1 and 5

3. ✗ 2 and 4

4. ✓ 1 and 6

Question Number : 4 Question Id : 5113467684 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $u = \log \frac{x^2}{y}$, then $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} =$

Options :

1. ✓ 1

2. ✗ $\frac{1}{u}$

3. ✖ $2u$

4. ✖ 0 (zero)

Question Number : 5 Question Id : 5113467685 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The value of $\int_0^a \frac{dx}{\sqrt{a-x}} =$

Options :

1. ✖ $\sqrt{a}$ 2. ✖ $\frac{1}{\sqrt{a}}$ 3. ✔ $2\sqrt{a}$ 4. ✖ $\frac{2}{\sqrt{a}}$

Question Number : 6 Question Id : 5113467686 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The integrating factor when the differential equation $y^2 dx + (xy-1)dy = 0$ is changed to linear form is

Options :

1. ✖ X

2. ✔ y

3. ✖ $\frac{1}{x}$ 4. ✖ $\frac{1}{y}$

Question Number : 7 Question Id : 5113467687 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The general solution of the differential equation $\frac{dy}{dx} = \log(x \frac{dy}{dx} - y)$ is

Options :

1. ✓ $y = cx - e^c$
2. ✗ $y = cx + e^c$
3. ✗ $y = cx + \log c$
4. ✗ $y = cx - \log c$

Question Number : 8 Question Id : 5113467688 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The Particular integral of $(D^2+1)y = \cos x$ where $D = \frac{d}{dx}$ is

Options :

1. ✗ $x \sin x$
2. ✗ $x \cos x$
3. ✓ $\frac{x \sin x}{2}$
4. ✗ $\frac{x \cos x}{2}$

Question Number : 9 Question Id : 5113467689 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The solution of the partial differential equation $pe^y = qe^x$ is $z =$

Options :

1. ✓ $ae^x + ae^y + c$
2. ✗ $ae^{-x} + ae^{-y} + c$

3. ✖ $ae^x + be^y + c$

4. ✖ $ae^x - be^y + c$

Question Number : 10 Question Id : 5113467690 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The Residue of $f(z) = \frac{ze^{iz}}{z^2 + a^2}$ at $z = -ai$ is

Options :

1. ✖ $\frac{1}{2}e^{ia}$

2. ✖ $\frac{1}{2}e^{-ia}$

3. ✖ $\frac{1}{2}e^{-a}$

4. ✔ $\frac{1}{2}e^a$

Display Number Panel:

Group All Questions:

Yes

No

Question Number : 11 Question Id : 5113467691 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A certain number of resistors connected in parallel has an effective resistance of $X \Omega$. The effective resistance changes to $Y \Omega$ when one of the resistors is removed. The resistance of the resistor that is removed is:

Options :

1. ✖ $\sqrt{XY}$

2. ✖ $\frac{(Y-X)}{XY}$

3. ✗ $(Y - X)$

4. ✓ $\frac{XY}{(Y-X)}$

Question Number : 12 Question Id : 5113467692 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The maximum current that an $80 \text{ k}\Omega$, 2 W resistor can safely conduct is:

Options :

1. ✗ $25 \mu\text{A}$

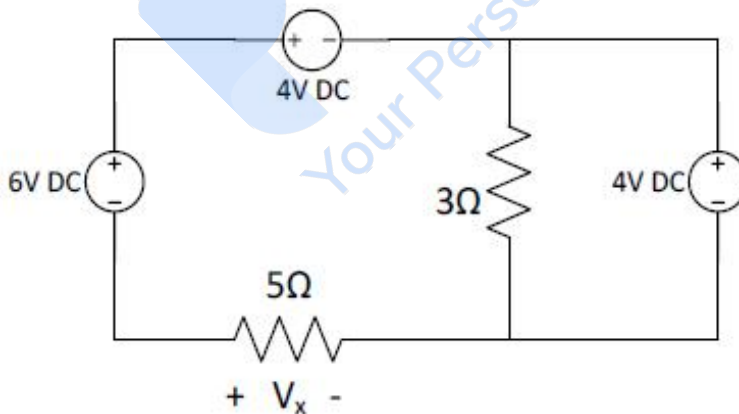
2. ✓ 5 mA

3. ✗ 40 mA

4. ✗ 160 mA

Question Number : 13 Question Id : 5113467693 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The voltage V_x across the 5Ω resistor in the circuit shown below is:



Options :

1. ✓ 2 V

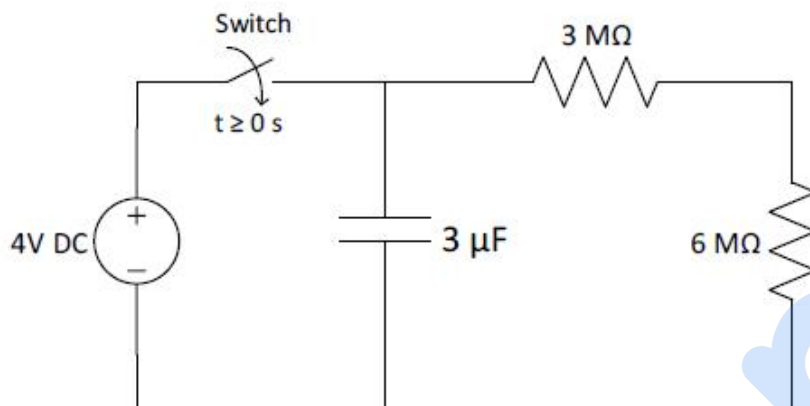
2. ✗ -2 V

3. ✗ 14 V

4. ✖ 10 V

Question Number : 14 Question Id : 5113467694 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In the circuit shown below, the switch was initially open for a very long time and the capacitor is without charge. If the switch is now closed at time $t = 0$ s, then the value of time constant for the circuit is:

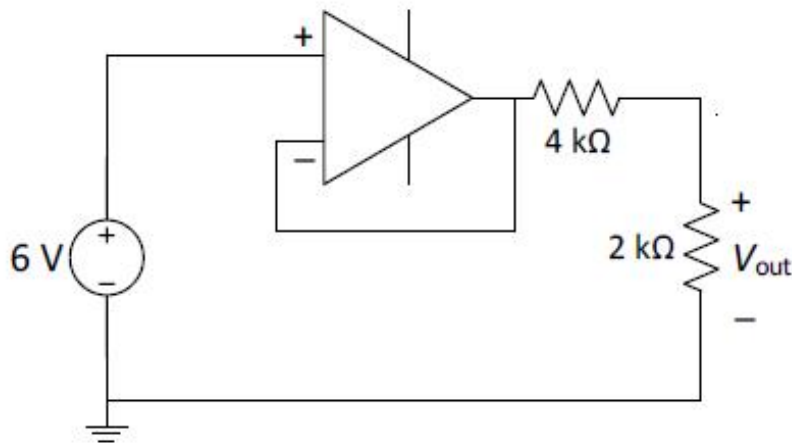


Options :

- 1. ✔ zero
- 2. ✖ 4 seconds
- 3. ✖ 6 seconds
- 4. ✖ 27 seconds

Question Number : 15 Question Id : 5113467695 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For the op-amp circuit shown below, the power absorbed by the $4\text{ k}\Omega$ resistor is:

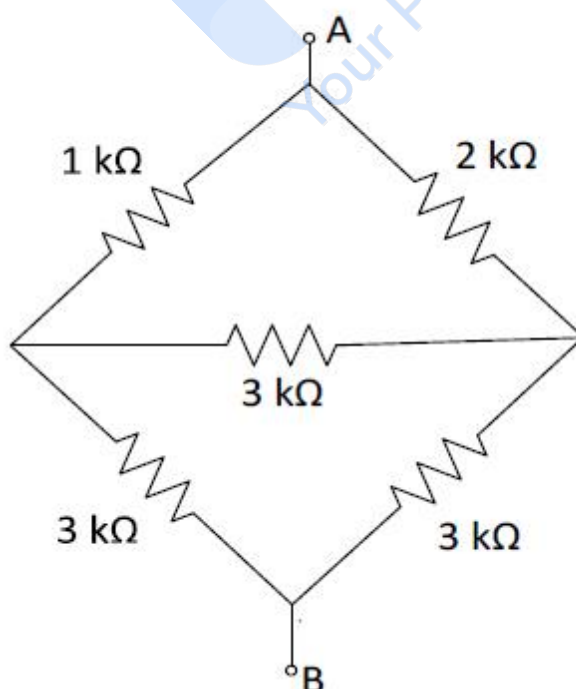


Options :

1. ✗ 2 mW
2. ✓ 4 mW
3. ✗ 6 mW
4. ✗ 9 mW

Question Number : 16 Question Id : 5113467696 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The resistance between the nodes A and B for the resistive bridge circuit shown below is:

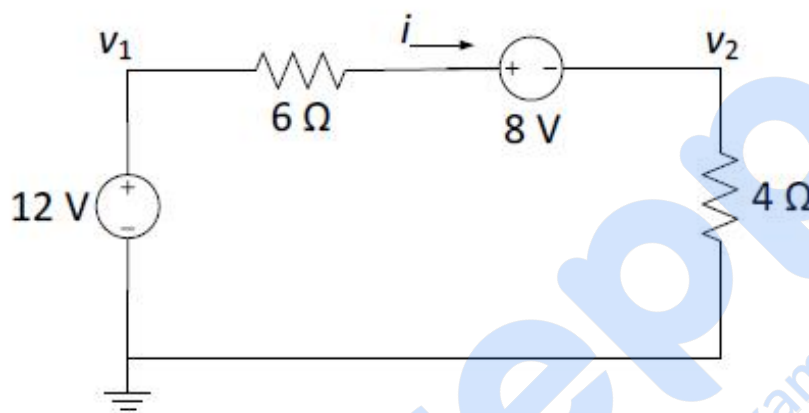


Options :

1. ✓ $2.2 \text{ k}\Omega$
2. ✗ $3 \text{ k}\Omega$
3. ✗ $3.25 \text{ k}\Omega$
4. ✗ $5.21 \text{ k}\Omega$

Question Number : 17 Question Id : 5113467697 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For the circuit shown below, v_1 and v_2 are related as:



Options :

1. ✗ $v_1 = 6i - 8 + v_2$
2. ✗ $v_1 = -6i + 8 + v_2$
3. ✗ $v_1 = -6i - 8 + v_2$
4. ✓ $v_1 = 6i + 8 + v_2$

Question Number : 18 Question Id : 5113467698 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A load is connected to a network. At the terminals to which the load is connected, the Thevenin voltage and Thevenin resistance are 40 V and 10Ω respectively. The maximum power supplied to the load is:

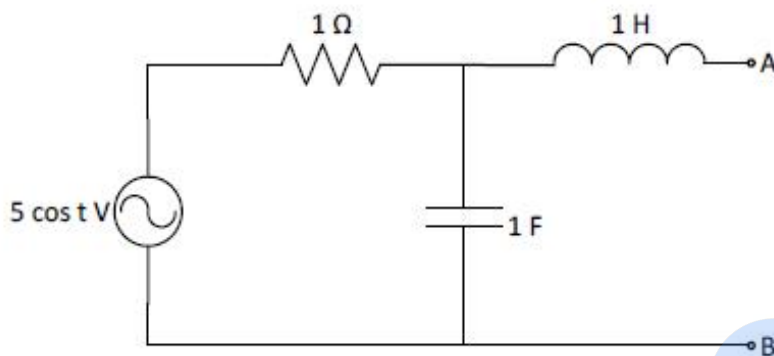
Options :

1. ✗ 4 W

2. ✓ 40 W
3. ✗ 80 W
4. ✗ 160 W

Question Number : 19 Question Id : 5113467699 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For the circuit shown below, the Thevenin impedance at terminals $A-B$ is:



Options :

1. ✓ $(0.5 + j0.5) \Omega$
2. ✗ 1Ω
3. ✗ $(1 + j2) \Omega$
4. ✗ $(1 - j2) \Omega$

Question Number : 20 Question Id : 5113467700 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

An LC-circuit has a Q of 100 and resonates at 1000 kHz. The lower and upper cut-off frequencies of this circuit are:

Options :

1. ✓ 995 kHz and 1005 kHz
2. ✗ 990 kHz and 1010 kHz

3. ✖ 950 kHz and 1050 kHz
4. ✖ 900 kHz and 1100 kHz

Question Number : 21 Question Id : 5113467701 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

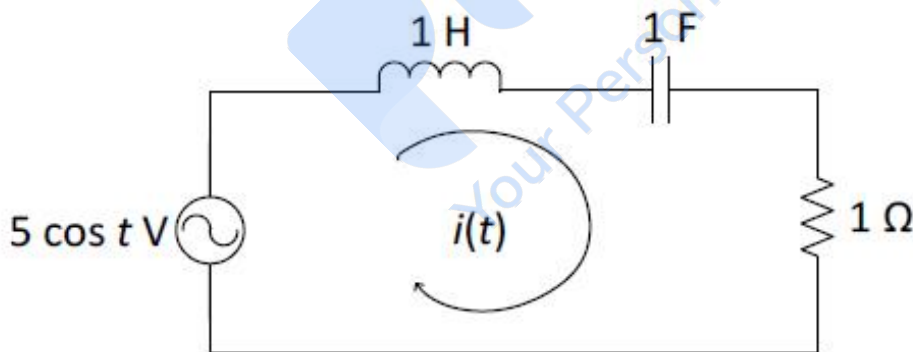
A series RLC circuit, with R set to $0\ \Omega$, will produce a/an:

Options :

1. ✔ undamped response
2. ✖ underdamped response
3. ✖ critically damped response
4. ✖ overdamped response

Question Number : 22 Question Id : 5113467702 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In the circuit shown below, the current $i(t)$ is:



Options :

1. ✔ $5 \cos t\ \text{A}$
2. ✖ $5 \sin t\ \text{A}$
3. ✖ $10 \cos t\ \text{A}$

4. ✖ $2.24 \cos(t - 45^\circ) \text{ A}$

Question Number : 23 Question Id : 5113467703 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A periodic signal $(3 + 6 \sin \omega_0 t)$ volts is applied across a $1\text{-}\Omega$ resistor. The power dissipated in the resistor is:

Options :

1. ✖ 9 W

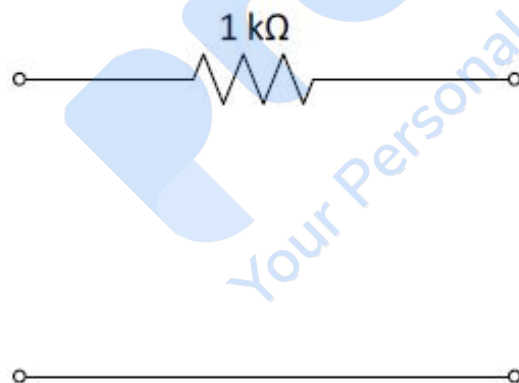
2. ✖ 22.5 W

3. ✔ 27 W

4. ✖ 45 W

Question Number : 24 Question Id : 5113467704 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For the single-element two-port network shown below, z_{11} is:



Options :

1. ✖ 0

2. ✖ $0.5 \text{ k}\Omega$

3. ✖ $1 \text{ k}\Omega$

4. ✔ Undefined

Question Number : 25 Question Id : 5113467705 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The odd component of the signal $x(t) = e^{jt}$ is:

Options :

1. ✗ $\cos t + j \sin t$
2. ✗ $\cos t$
3. ✗ $\sin t$
4. ✓ $j \sin t$

Question Number : 26 Question Id : 5113467706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Given that $\delta(t)$ is the unit impulse function, the value of the integral $\int_1^2 (2t^2 + 1) \delta(t) dt$ is:

Options :

1. ✗ 3
2. ✓ 0
3. ✗ 1
4. ✗ ∞

Question Number : 27 Question Id : 5113467707 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Let E_x be the energy contained in a signal $x(t)$. Then the energy of the signal $x(at)$ is:

Options :

1. ✓ E_x/a
2. ✗ E_x/a^2
3. ✗ aE_x
4. ✗ a^2E_x

Question Number : 28 Question Id : 5113467708 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The period of a function $x(t) = 2\cos\left[\frac{\pi}{4}(t - 1)\right]$ is:

Options :

1. ✓ 8 seconds
2. ✗ 4 seconds
3. ✗ (1/8) second
4. ✗ (1/4) second

Question Number : 29 Question Id : 5113467709 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The convolution of a rectangular pulse of width W with an identical rectangular pulse yields a:

Options :

1. ✗ rectangular pulse of width $2W$
2. ✓ triangular pulse of width $2W$
3. ✗ a sinc function
4. ✗ trapezoidal pulse of width $3W$

Question Number : 30 Question Id : 5113467710 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The Fourier transform of a rectangular pulse is:

Options :

1. ✗ an impulse
2. ✓ a sinc function
3. ✗ another rectangular pulse

4. ✖

Question Number : 31 Question Id : 5113467711 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Consider a periodic impulse train in the time domain. The Fourier transform of this impulse train is:

Options :

1. ✔ a periodic impulse train in the frequency domain
2. ✖ a Gaussian function
3. ✖ a constant
4. ✖ a sine function

Question Number : 32 Question Id : 5113467712 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The Fourier transform of the signum function $\text{sgn}(t)$ is:

Options :

1. ✖ $\pi\delta(\omega)$
2. ✖ $\pi\delta(\omega) + \frac{1}{j\omega}$
3. ✔ $\frac{2}{j\omega}$
4. ✖ $\frac{1}{1+j\omega}$

Question Number : 33 Question Id : 5113467713 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Given that a signal $x(t)$ has the Fourier transform $X(\omega)$, the Fourier transform of the signal $x(1 - t)$ in terms of $X(\omega)$ is:

Options :

1. ✖ $X(\omega)e^{j\omega}$

2. ✖ $X(\omega)e^{-j\omega}$
3. ✖ $X(-\omega)e^{j\omega}$
4. ✔ $X(-\omega)e^{-j\omega}$

Question Number : 34 Question Id : 5113467714 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Consider an LTI system having the unit-impulse response $h(t) = \delta(t) - e^{-t}u(t)$, where $\delta(t)$ and $u(t)$ are the unit-impulse function and the unit-step function respectively. The Fourier transform of $h(t)$ can be expressed as:

Options :

1. ✖ $H(\omega) = \delta(\omega) - \frac{1}{1-j\omega}$
2. ✖ $H(\omega) = \frac{1-j\omega}{1+j\omega}$
3. ✖ $H(\omega) = 1 - \frac{1}{1-j\omega}$
4. ✔ $H(\omega) = \frac{j\omega}{1+j\omega}$

Question Number : 35 Question Id : 5113467715 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The discrete-time signal $x(n) = 2(-1)^n$ has a fundamental period of:

Options :

1. ✖ 0
2. ✔ 2
3. ✖ 4
4. ✖ 8

Question Number : 36 Question Id : 5113467716 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The discrete-time Fourier series coefficients of a real and odd periodic signal are:

Options :

1. ✗ real and odd
2. ✗ real and even
3. ✓ imaginary and odd
4. ✗ imaginary and even

Question Number : 37 Question Id : 5113467717 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Consider a signal $x(t)$ whose Laplace transform is $X(s) = \frac{3}{s(s+1)}$. The value of $x(t)$ for $t \rightarrow 0$ is:

Options :

1. ✓ 0
2. ✗ ∞
3. ✗ 3
4. ✗ $\frac{1}{3}$

Question Number : 38 Question Id : 5113467718 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The z -transform of the signal $\delta(n - m)$ is:

Options :

1. ✓ z^{-m}
2. ✗ $z^{-(n-m)}$
3. ✗ $\frac{1}{z-m}$

4. ✖ $\frac{1}{z-(n-m)}$

Question Number : 39 Question Id : 5113467719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A finite-length signal $x(n)$ has the z-transform $X(z) = 0.5 + 0.2z^{-1} + 0.7z^{-2} + 0.5z^{-3}$. The region of convergence of the signal is:

Options :

1. ✖ on the unit circle
2. ✖ outside the unit circle
3. ✖ inside the unit circle
4. ✔ the entire z -plane except $z = 0$

Question Number : 40 Question Id : 5113467720 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

An LTI system (initially at rest) is given by the difference equation $y(n) - y(n - 1] = x(n)$. Its impulse response is:

Options :

1. ✔ $y(n) = u(n)$
2. ✖ $y(n) = u(n - 1)$
3. ✖ $y(n) = nu(n)$
4. ✖ $y(n) = (-1)^{n+1}u(n)$

Question Number : 41 Question Id : 5113467721 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A system given by the difference equation $y(n) = nx(n) + 3$ is:

Options :

1. ✖ linear and time variant
2. ✖ linear and time-invariant
3. ✔ non-linear and time variant
4. ✖ non-linear and time-invariant

Question Number : 42 Question Id : 5113467722 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The addition of a minute quantity of antimony to a silicon crystal makes the crystal a:

Options :

1. ✖ good insulator
2. ✖ good conductor
3. ✖ *p*-type semiconductor
4. ✔ *n*-type semiconductor

Question Number : 43 Question Id : 5113467723 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

What two quantities are connected by the Einstein relation?

Options :

1. ✔ The mobility and the diffusion coefficient
2. ✖ The diffusion coefficient and the minority carrier lifetime
3. ✖ The diffusion length and the minority carrier lifetime
4. ✖ The hole and electron mobilities

Question Number : 44 Question Id : 5113467724 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

When a piece of germanium and another of copper are cooled from room temperature to 100°K , the resistance of:

Options :

1. ✗ each of them decreases
2. ✗ each of them increases
3. ✗ germanium decreases and that of copper increases
4. ✓ germanium increases and that of copper decreases

Question Number : 45 Question Id : 5113467725 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A sample of n -type silicon:

Options :

1. ✗ is negatively charged since it contains an excess of free electrons
2. ✗ predominantly contains trivalent impurities
3. ✗ contains only tetravalent impurities
4. ✓ contains an excess of free electrons and it is electrically neutral

Question Number : 46 Question Id : 5113467726 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The electron concentration in Si at 300°K with a Boron doping of $N_A = 10^{17} \text{ cm}^{-3}$ is:

Options :

1. ✗ $n = 10^{10} \text{ cm}^{-3}$
2. ✗ $n = 10^{17} \text{ cm}^{-3}$
3. ✓ $n = 10^3 \text{ cm}^{-3}$

4. ✖ $n = 10^6 \text{ cm}^{-3}$

Question Number : 47 Question Id : 5113467727 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The thermal voltage V_t at room temperature (20°C) is approximately:

Options :

1. ✔ 25 mV

2. ✖ 25 V

3. ✖ 50 mV

4. ✖ 100 μV

Question Number : 48 Question Id : 5113467728 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Under which of the following conditions does an ideal MOS capacitor substrate lack mobile charge carriers:

Options :

1. ✖ Inversion

2. ✖ Accumulation

3. ✔ Depletion

4. ✖ Reverse bias

Question Number : 49 Question Id : 5113467729 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Laser action is found in:

Options :

1. ✔ direct band gap semiconductors

2. ✖ indirect band gap semiconductors

3. ✖

4. ✖ silicon

Question Number : 50 Question Id : 5113467730 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Gettering is the process of trapping elements in silicon (semiconductor) occur

Options :

1. ✖ In the oxide layer

2. ✖ Near the channel

3. ✖ Inside source and drain

4. ✔ Near the back side of wafer

Question Number : 51 Question Id : 5113467731 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Anti-reflective coating (ARC) is applied on silicon wafer:

Options :

1. ✖ to reduce the shine as shiny surface can affect our eyes

2. ✖ to make photoresist stick to silicon surface properly

3. ✔ to avoid standing wave in photoresist

4. ✖ after applying photoresist and before exposing wafer to light

Question Number : 52 Question Id : 5113467732 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For an ideal p-MOSFET with threshold voltage of $-0.4V$, which of the following statements is true?

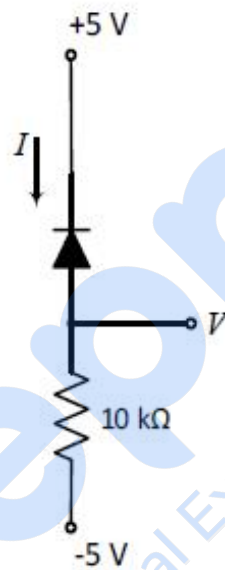
Options :

1. ✖ It has p-type substrate

2. ✓ It has n-type substrate
3. ✗ It is depletion mode MOSFET
4. ✗ It is not possible for silicon substrate

Question Number : 53 Question Id : 5113467733 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Let the diode shown below be ideal. Then the current I and voltage V are:



Options :

1. ✗ 0 mA and +5 V
2. ✓ 0 mA and -5 V
3. ✗ 0.5 mA and -5 V
4. ✗ 1 mA and +5 V

Question Number : 54 Question Id : 5113467734 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The enhancement-mode MOSFET is also known as:

Options :

1. ✗ p-type MOSFET

- 2. ✖ normally-on MOSFET
- 3. ✖ normally-off MOSFET
- 4. ✔ normally-off MOSFET

Question Number : 55 Question Id : 5113467735 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Consider a full-wave bridge rectifier fed with a 50 Hz sinusoidal voltage. The lowest ripple frequency at the output of the rectifier will be:

Options :

- 1. ✖ 50 Hz
- 2. ✔ 100 Hz
- 3. ✖ 200 Hz
- 4. ✖ 400 Hz

Question Number : 56 Question Id : 5113467736 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following statements is not true regarding the ' α ' of a bipolar junction transistor?

Options :

- 1. ✖ It is the ratio of the change in collector current to the change in emitter current.
- 2. ✔ It is the ratio of the change in collector current to the change in base current.
- 3. ✖ It is the current gain in the common-base configuration.
- 4. ✖ It usually has a value close to unity.

Question Number : 57 Question Id : 5113467737 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

When both the emitter junction and the collector junction are forward biased, a transistor is said to be operating in:

Options :

1. ✖ active region
2. ✔ saturation region
3. ✖ breakdown region
4. ✖ cut off region

Question Number : 58 Question Id : 5113467738 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If an amplifier has a power gain of 100, then its gain in decibels (dB) is:

Options :

1. ✖ 10
2. ✔ 20
3. ✖ 40
4. ✖ 100

Question Number : 59 Question Id : 5113467739 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

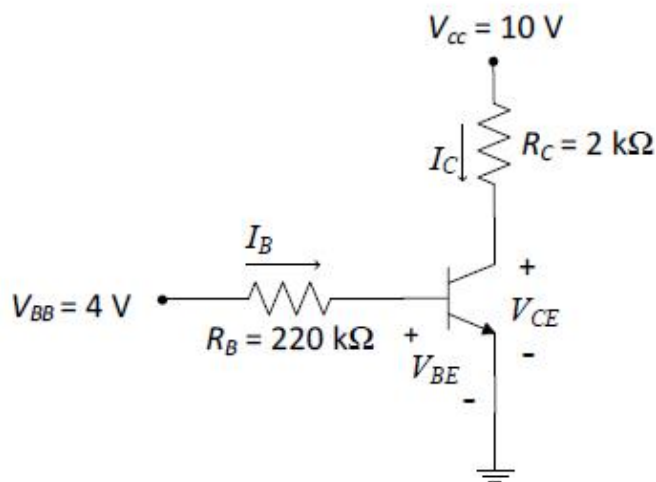
When compared to CE and CC amplifier configurations, a CB amplifier has:

Options :

1. ✖ larger current gain
2. ✖ larger voltage gain
3. ✖ higher input resistance
4. ✔ lower input resistance

Question Number : 60 Question Id : 5113467740 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In the circuit shown below, the base current I_B is $15 \mu A$. Assuming that $\beta = 200$ and $V_{BE} = 0.7 V$, the collector-to-emitter voltage V_{CE} is:



Options :

1. ✗ 2 V
2. ✗ 3 V
3. ✓ 4 V
4. ✗ 5 V

Question Number : 61 Question Id : 5113467741 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In an amplifier, the frequency response curve falls of in the low frequency range due to:

Options :

1. ✗ decreasing impedance of the coupling capacitors
2. ✓ increasing impedance of coupling capacitors
3. ✗ decreasing impedance of shunt capacitors
4. ✗ increasing impedance of shunt capacitors

Question Number : 62 Question Id : 5113467742 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Of the following oscillators, the one which is not an LC-type of oscillator is the:

Options :

Wein-bridge oscillator

1. ✓

Clapp oscillator

2. ✗

Hartley oscillator

3. ✗

Colpitt's oscillator

4. ✗

Question Number : 63 Question Id : 5113467743 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The type of noise which occurs in op-amps due to discrete flow of current is:

Options :

flicker noise

1. ✗

thermal noise

2. ✗

shot noise

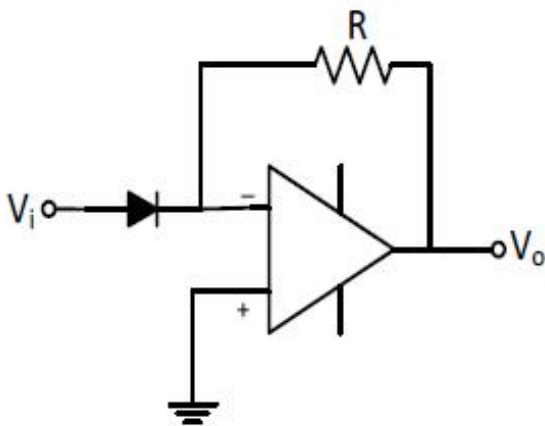
3. ✓

burst noise

4. ✗

Question Number : 64 Question Id : 5113467744 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The op-amp circuit shown below is a/an:



Options :

clipping circuit

1. ✗

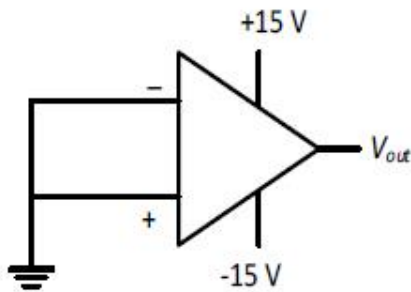
2. ✗ clamping circuit

3. ✗ logarithmic amplifier

4. ✓ antilog (or exponential) amplifier

Question Number : 65 Question Id : 5113467745 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The op-amp shown in the circuit below has an open-loop voltage gain of 10^5 and input offset voltage of 2 mV. The output voltage V_{out} will be approximately:



Options :

1. ✗ 0 V

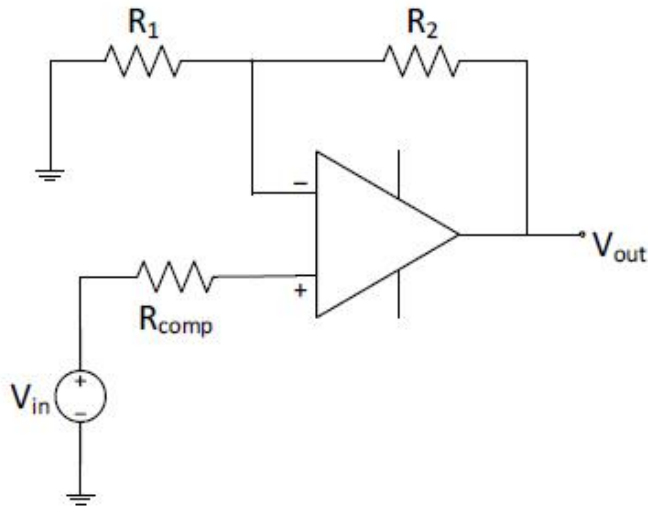
2. ✗ 2 mV

3. ✓ +15 V or -15V

4. ✗ +200 V or -200V

Question Number : 66 Question Id : 5113467746 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For minimizing offset voltage error, the value of the bias current compensating resistor R_{comp} in the circuit shown below should be:



Options :

1. ✗ R_1
2. ✗ R_2/R_1
3. ✗ $R_1 + R_2$
4. ✓ $\frac{R_1 R_2}{R_1 + R_2}$

Question Number : 67 Question Id : 5113467747 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

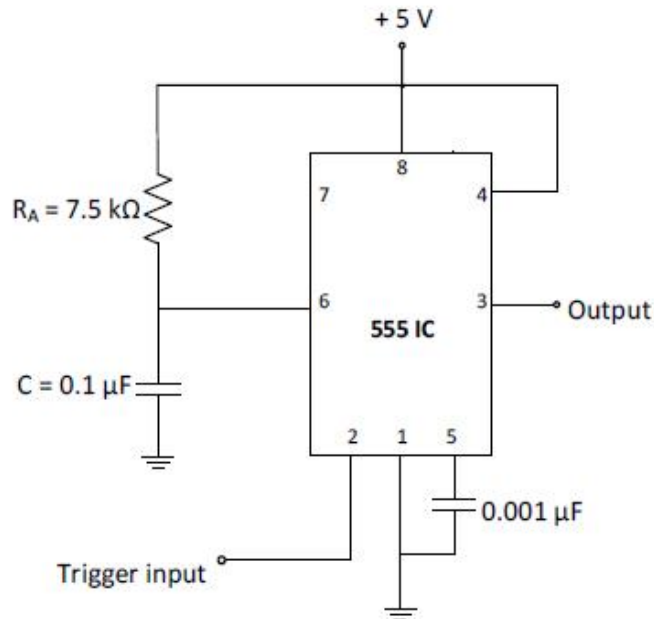
Two's complement representation of the decimal value (-68) using 8-bit binary format is:

Options :

1. ✗ 01000100
2. ✓ 10111100
3. ✗ 11000100
4. ✗ 00111100

Question Number : 68 Question Id : 5113467748 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The 555-timer circuit shown below is triggered by a negative pulse. Then the width of the output pulse will be:



Options :

1. ✗ 0.75 ms
2. ✓ 0.825 ms
3. ✗ 1.15 ms
4. ✗ 7.5 ms

Question Number : 69 Question Id : 5113467749 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A 8-bit shift register is loaded with a data equivalent to 42_{10} . If the contents of the shift register are shifted left (towards MSB) by two bits, the equivalent decimal value would now be:

Options :

1. ✗ 4200
2. ✗ 422
3. ✓ 168
4. ✗ 10

Question Number : 70 Question Id : 5113467750 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

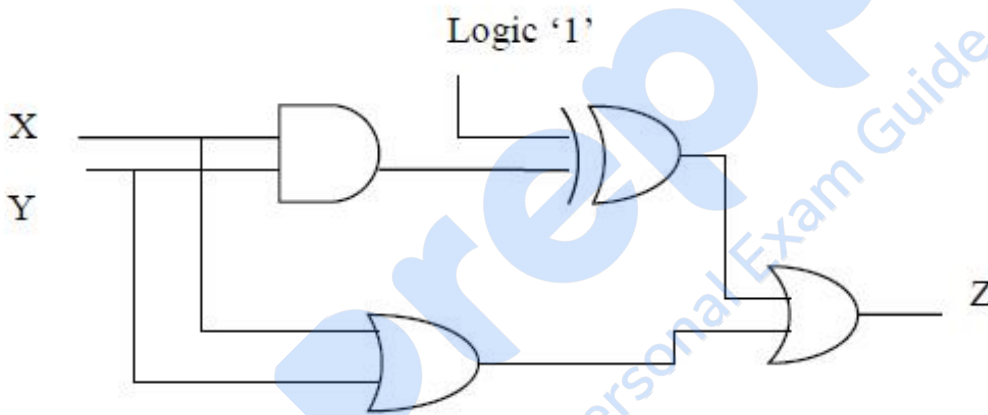
The complement of $\bar{A}B + \bar{C}D$ is:

Options :

1. ✓ $(A + \bar{B})(C + \bar{D})$
2. ✗ $A\bar{B} + C\bar{D}$
3. ✗ $(\bar{A} + B) + (\bar{C} + D)$
4. ✗ $\bar{A}(B + \bar{C})D$

Question Number : 71 Question Id : 5113467751 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The reduced Boolean expression for the output of the circuit shown below is:



Options :

1. ✗ $Z = XY$
2. ✗ $Z = \bar{X} + \bar{Y}$
3. ✓ $Z = 1$
4. ✗ $Z = 0$

Question Number : 72 Question Id : 5113467752 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The reduced SOP form for the Boolean function $Y(A, B, C, D) = \prod(2, 3, 4, 5, 10, 11, 12, 13)$ is:

Options :

1. ✗ $AB + CD$
2. ✗ $\bar{B}C + B\bar{C}$
3. ✗ $AC + \bar{A}\bar{C}$
4. ✓ $BC + \bar{B}\bar{C}$

Question Number : 73 Question Id : 5113467753 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In the 74xx series of TTL devices, the device number of the Quad-2 input NAND gates is:

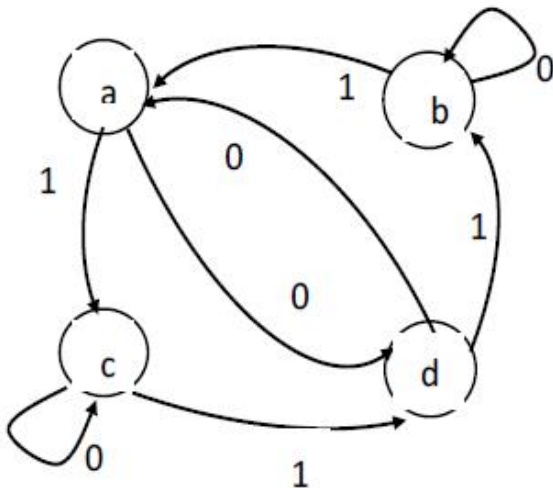
Options :

1. ✓ 7400
2. ✗ 7486
3. ✗ 7402
4. ✗ 7432

Question Number : 74 Question Id : 5113467754 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For the sequential circuit whose state diagram is shown below, assume that the initial state is 'b'.

For an input sequence 1101001, the next state sequence would be:



Options :

1. ✓ accdadb

2. ✖ accdbdc

3. ✖ bedcade

4. ✖ dbcaadb

Question Number : 75 Question Id : 5113467755 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A 200 kHz clock signal is applied to a JK flip-flop with $J=1$ and $K=1$. The frequency of the output waveform is:

Options :

1. ✖ 50 kHz

2. ✔ 100 kHz

3. ✖ 200 kHz

4. ✖ 400 kHz

Question Number : 76 Question Id : 5113467756 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The type of flip-flop which is best suited for synchronous transfer because it requires the least interconnections from one flip-flop to the other is:

Options :

1. ✖ T

2. ✔ D

3. ✖ JK

4. ✖ RS

Question Number : 77 Question Id : 5113467757 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The minimum number of flip-flops required to obtain a mod-80 counter is:

Options :

1. ✖ 5

2. ✖ 6

3. ✔ 7

4. ✖ 8

Question Number : 78 Question Id : 5113467758 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The number of distinct timing signals which can be generated by a 4-bit Johnson counter is

Options :

1. ✖ 4

2. ✔ 8

3. ✖ 15

4. ✖ 16

Question Number : 79 Question Id : 5113467759 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The number of resistor(s) per bit required in a weighted resistor digital-to-analog converter (DAC) is/are:

Options :

1. ✔ 1

2. ✖ 2

3. ✖ 3

4. ✖ 4

Question Number : 80 Question Id : 5113467760 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of these amplifiers is found in a DAC?

www.prepp.in

Options :

1. ✓ summer
2. ✗ voltage follower
3. ✗ difference amplifier
4. ✗ non-inverting amplifier

Question Number : 81 Question Id : 5113467761 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A memory bank is formed using RAM ICs of size 512x8. The starting address in hexadecimal format of the fifth IC connected in cascade in a memory bank of 4 kB is:

Options :

1. ✗ 03F0
2. ✗ 7800
3. ✓ 0800
4. ✗ 3700

Question Number : 82 Question Id : 5113467762 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The 8085 microprocessor is a _____ bit _____ pin IC:

Options :

1. ✗ 8, 20
2. ✓ 8, 40
3. ✗ 16, 40
4. ✗ 12, 32

Question Number : 83 Question Id : 5113467763 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The register pair used for indirect mode of memory addressing is:

Options :

- 1. ✗ SP
- 2. ✗ BC
- 3. ✗ DE
- 4. ✓ HL

Question Number : 84 Question Id : 5113467764 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

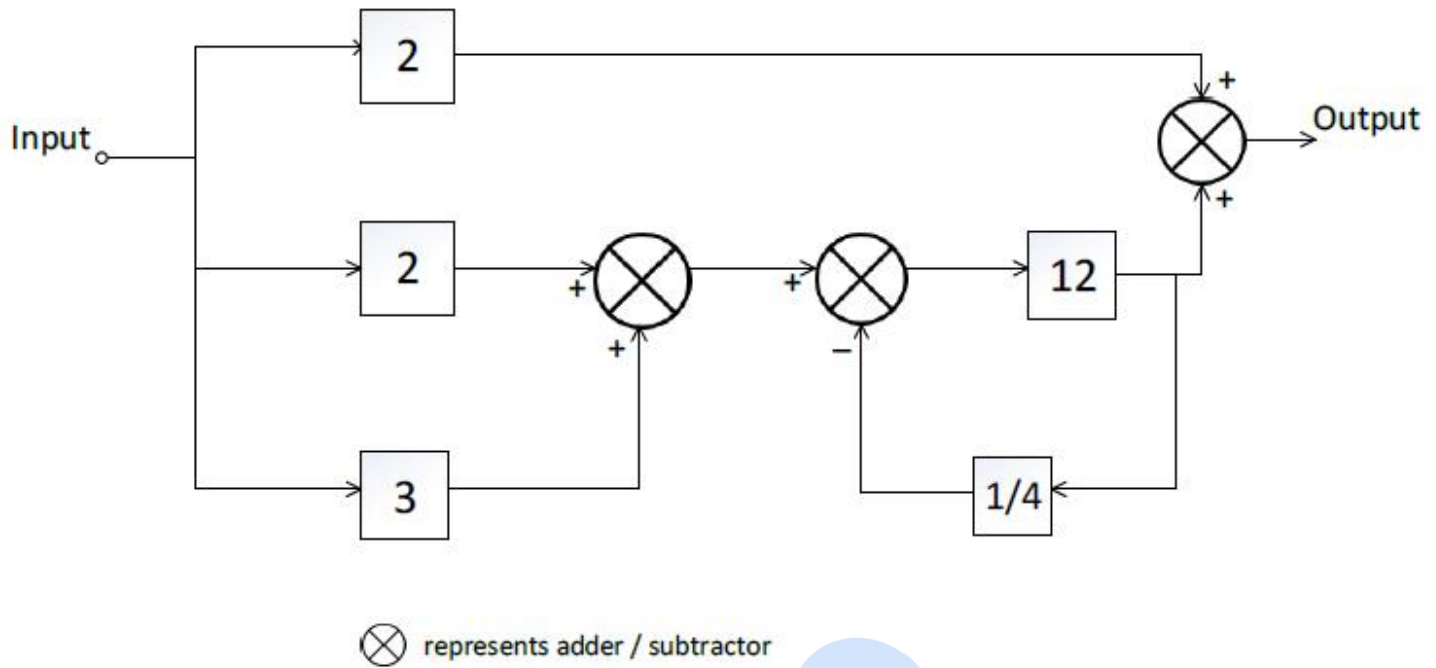
Among the following, the elements of a rotational motion system are:

Options :

- 1. ✗ Mass, Spring, Friction
- 2. ✓ Inertia, Damper, Spring
- 3. ✗ Work, Energy, Power
- 4. ✗ Force, Pressure, Viscosity

Question Number : 85 Question Id : 5113467765 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The gain of the set up given in the block diagram below is:



Options :

1. ✗ 36
2. ✗ 13
3. ✓ 17
4. ✗ -10

Question Number : 86 Question Id : 5113467766 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For a system with transfer function $\frac{k}{s(s+2)(s+4)}$, the breakaway point will be:

Options :

1. ✓ between 0 and -2
2. ✗ between 0 and -4
3. ✗ between -2 and -4
4. ✗ beyond -4

Question Number : 87 Question Id : 5113467767 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Consider the unity feedback control system $G(s) = \frac{10(s+2)}{s^2(s+1)}$. The type of input which gives a constant steady state error for this system is a/an:

Options :

1. ✖ impulse function
2. ✖ step function
3. ✖ ramp function
4. ✔ parabolic function

Question Number : 88 Question Id : 5113467768 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For the second order underdamped system with unit step input, the second overshoot will occur at $t = \underline{\hspace{2cm}}$:

Options :

1. ✖ $(2\pi/\omega_d)$
2. ✔ $(3\pi/\omega_d)$
3. ✖ $(4\pi/\omega_d)$
4. ✖ $(5\pi/\omega_d)$

Question Number : 89 Question Id : 5113467769 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A second-order unity feedback control system has the closed loop transfer function $\frac{C(s)}{R(s)} = \frac{2}{s^2 + 4}$.

The system is:

Options :

1. ✖ overdamped

www.prepp.in

2. ✗ underdamped

3. ✓ undamped

4. ✗ critically damped

Question Number : 90 Question Id : 5113467770 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which mechanism in control engineering implies an ability to measure the state by taking measurements at the output:

Options :

1. ✗ Controllability

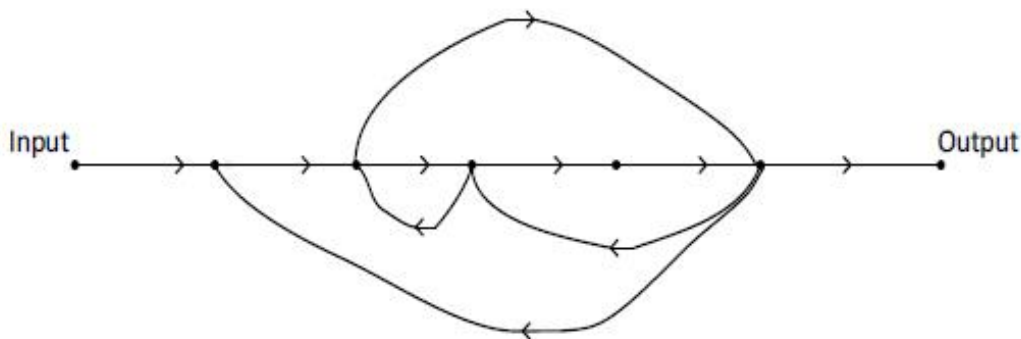
2. ✓ Observability

3. ✗ Differentiability

4. ✗ Adaptability

Question Number : 91 Question Id : 5113467771 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The number of individual loops in the given signal-flow graph below is:



Options :

1. ✓ 4

2. ✗ 5

3. ✖ 3

4. ✖ 2

Question Number : 92 Question Id : 5113467772 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the phase angle at gain crossover frequency is found to be -105° , the phase margin of the system will be:

Options :

1. ✖ 23° 2. ✖ 45° 3. ✖ 60° 4. ✔ 75°

Question Number : 93 Question Id : 5113467773 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In Routh-Hurwitz criterion, if there are changes in sign in the elements of the first column, then the number of sign changes indicates the:

Options :

1. ✖ number of roots with negative real parts

2. ✔ number of roots with positive real parts

3. ✖ number of roots of opposite sign

4. ✖ number of roots of same sign

Question Number : 94 Question Id : 5113467774 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A unity feedback system has an open-loop transfer function of $G(s) = \frac{25(s+4)}{s(s+0.5)(s+2)}$. The steady state error for unit ramp input is:

Options :

1. ✗ 100
2. ✗ 1
3. ✓ 0.01
4. ✗ 0.001

Question Number : 95 Question Id : 5113467775 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

On the Bode magnitude plot, the slope of $1/(1 + j\omega)^2$ for large values of ω is:

Options :

1. ✗ -20 dB/decade
2. ✗ +20 dB/decade
3. ✓ -40 dB/decade
4. ✗ +40 dB/decade

Question Number : 96 Question Id : 5113467776 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A Gaussian probability function is given by $p_X(x) = ke^{-x^2/8}$, $-\infty < x < \infty$. The value of k should be

Options :

1. ✓ $\frac{1}{2\sqrt{2\pi}}$
2. ✗ $\sqrt{\frac{2}{\pi}}$
3. ✗ $\frac{1}{\pi\sqrt{2}}$

4. ✖ $\frac{1}{\sqrt{2\pi}}$

Question Number : 97 Question Id : 5113467777 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A single sideband suppressed carrier signal can be demodulated using:

Options :

- 1. ✖ a discriminator
- 2. ✖ an integrator
- 3. ✔ a synchronous detector
- 4. ✖ an envelope detector

Question Number : 98 Question Id : 5113467778 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

An AM transmitter puts out 100 watts with no modulation. With 20% single-tone modulation it will generate:

Options :

- 1. ✖ 100 watts
- 2. ✔ 102 watts
- 3. ✖ 120 watts
- 4. ✖ 140 watts

Question Number : 99 Question Id : 5113467779 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A 5 kHz modulating signal is transmitted as an FM signal with a modulation index of 2. Using Carson's rule, the approximate bandwidth of the FM signal is

Options :

- 1. ✖ 10 kHz

2. ✗ 14 kHz
3. ✓ 30 kHz
4. ✗ 20 kHz

Question Number : 100 Question Id : 5113467780 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

FM receivers for the standard 88-108 MHz broadcast band employ an intermediate frequency of

Options :

1. ✗ 455 kHz
2. ✗ 1 MHz
3. ✓ 10.7 MHz
4. ✗ 22.5 MHz

Question Number : 101 Question Id : 5113467781 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A broadcast station transmits at a power of 5 kW. The radio channel power attenuation is 10 dB/km. The range of this radio station, if the radio receiver has a sensitivity (i.e., minimum received power required) of 5 μ W, is

Options :

1. ✓ 9 km
2. ✗ 18 km
3. ✗ 32 km
4. ✗ 50 km

Question Number : 102 Question Id : 5113467782 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The entropy of a discrete memoryless source that generates four messages with equal probability is

Options :

1. ✖ 0.25 bit/message
2. ✖ 1 bit/message
3. ✔ 2 bits/message
4. ✖ 4 bits/message

Question Number : 103 Question Id : 5113467783 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Consider an AWGN channel of bandwidth B . Let the channel capacity be C when operating at a

high signal-to-noise power ratio, that is $\left(\frac{S}{N}\right) \gg 1$. If $\frac{S}{N}$ is now quadrupled, that is increased by a

factor of 4, keeping B constant, the new value of channel capacity will be

Options :

1. ✖ unchanged, that is C
2. ✖ approximately $C + B$
3. ✔ approximately $C + 2B$
4. ✖ approximately $C + 4B$

Question Number : 104 Question Id : 5113467784 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A baseband message signal having a 5 kHz bandwidth is sampled at twice the Nyquist rate. The time interval between successive samples is

Options :

1. ✔ 50 μs
2. ✖ 100 μs
3. ✖ 100 ms

4. ✖ 50 ms

Question Number : 105 Question Id : 5113467785 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Emphasizing low-level signals and compressing higher-level signals is called

Options :

1. ✔ companding
2. ✖ quantizing
3. ✖ sampling
4. ✖ pre-emphasis

Question Number : 106 Question Id : 5113467786 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The Hamming distance between the two code words 10100101 and 01101000 is

Options :

1. ✖ 2
2. ✖ 3
3. ✖ 4
4. ✔ 5

Question Number : 107 Question Id : 5113467787 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the number of bits per sample in a PCM system is increased from n to $(n + 2)$, then the signal-to-quantization noise ratio will improve by approximately

Options :

1. ✖ 2 dB
2. ✖ 3 dB

3. ✖ 6 dB
4. ✔ 12 dB

Question Number : 108 Question Id : 5113467788 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The maximum amplitude of a 1-kHz sinusoidal signal input to a delta modulator that will prevent slope overload, for a step size of 0.1 Volt and sampling frequency of 10,000 samples/sec, is

Options :

1. ✖ 10 Volts
2. ✖ 3.3 Volts
3. ✖ π Volts
4. ✔ $\frac{1}{2\pi}$ Volt

Question Number : 109 Question Id : 5113467789 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The bit rate of a 1000 baud 16-QAM signal is

Options :

1. ✖ 16000 bits/sec
2. ✔ 4000 bits/sec
3. ✖ 1000 bits/sec
4. ✖ 250 bits/sec

Question Number : 110 Question Id : 5113467790 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For a bit rate of 16 kbps in a coherent binary FSK scheme, the appropriate values of transmitted frequencies from the choices below, are

Options :

1. ✓ 64 kHz and 80 kHz
2. ✗ 32 kHz and 40 kHz
3. ✗ 40 kHz and 80 kHz
4. ✗ 40 kHz and 64 kHz

Question Number : 111 Question Id : 5113467791 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The Q -function and the complementary error function $\text{erfc}(\cdot)$ are often encountered in bit-error rate (BER) calculations in digital communication. If $Q(2) = \frac{1}{2} \text{erfc}(x)$, what is x ?

Options :

1. ✗ $1/2$
2. ✗ 2
3. ✗ $1/\sqrt{2}$
4. ✓ $\sqrt{2}$

Question Number : 112 Question Id : 5113467792 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In CDMA, interference occurs if senders transmit data

Options :

1. ✗ at the same frequency
2. ✗ at the same time
3. ✓ using non-orthogonal codes
4. ✗ using orthogonal codes

Question Number : 113 Question Id : 5113467793 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Poynting vector is associated with

Options :

1. ✓ power flow in an electrostatic field
2. ✗ charge in an electrostatic field
3. ✗ flux in a magnetic field
4. ✗ current in an electrostatic field

Question Number : 114 Question Id : 5113467794 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The direction of propagation of an electromagnetic wave is obtained from

Options :

1. ✗ $\vec{E}$
2. ✗ $\vec{H}$
3. ✗ $\vec{E} \cdot \vec{H}$
4. ✓ $\vec{E} \times \vec{H}$

Question Number : 115 Question Id : 5113467795 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For a medium with permeability μ and permittivity ϵ , the intrinsic wave impedance is

Options :

1. ✗ $\sqrt{\mu\epsilon}$
2. ✗ $\sqrt{\frac{1}{\mu\epsilon}}$

3. ✓ $\sqrt{\frac{\mu}{\epsilon}}$

4. ✗ $\sqrt{\frac{\epsilon}{\mu}}$

Question Number : 116 Question Id : 5113467796 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For a good conductor, skin depth varies

Options :

1. ✗ directly as f

2. ✗ directly as $\sqrt{f}$

3. ✗ inversely as f

4. ✓ inversely as $\sqrt{f}$

Question Number : 117 Question Id : 5113467797 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Consider a lossless transmission line having an inductance L per unit length and capacitance C per unit length. The characteristic impedance of the transmission line is

Options :

1. ✓ $Z_0 = \sqrt{\frac{L}{C}}$

2. ✗ $Z_0 = \sqrt{\frac{C}{L}}$

3. ✗ $Z_0 = \sqrt{LC}$

4. ✗ $Z_0 = \frac{1}{\sqrt{LC}}$

Question Number : 118 Question Id : 5113467798 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Consider a transmission line that has a characteristic impedance of $50\ \Omega$ and is terminated by a $25\ \Omega$ load. The voltage at the load after a 1-volt pulse starts down this line will be

Options :

1. ✖ a delayed pulse of amplitude $-4/3$ volts
2. ✖ a delayed pulse of amplitude $4/3$ volts
3. ✔ a delayed pulse of amplitude $2/3$ volt
4. ✖ a delayed pulse of amplitude $1/2$ volt

Question Number : 119 Question Id : 5113467799 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A transmission line of any length can be made to simulate an infinite-length line if we

Options :

1. ✖ leave the line open at the end
2. ✖ short the line at the end
3. ✖ increase the standing wave ratio above unity
4. ✔ terminate the line with its characteristic impedance

Question Number : 120 Question Id : 5113467800 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Impedance inversion can be obtained using

Options :

1. ✖ a short-circuited stub
2. ✖ an open-circuited stub
3. ✔ a quarter-wave line

4. ✖

prepp
Your Personal Exam Guide