

Notations :

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

Question Paper Name:	Electro n Instru 13032020 S2
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Creation Date:	2020-03-13 18:24:44
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Share Answer Key With Delivery Engine:	No
Actual Answer Key:	Yes
Calculator:	Scientific
Magnifying Glass Required?:	No
Ruler Required?:	No
Eraser Required?:	No
Scratch Pad Required?:	No
Rough Sketch/Notepad Required?:	No
Protractor Required?:	No
Show Watermark on Console?:	Yes
Highlighter:	No
Auto Save on Console?:	No

Question Shuffling Allowed : Yes

Question Number : 1 Question Id : 231098601 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Given

$$\ddot{y}(t) + 3\dot{y}(t) + 4y(t) = 2\ddot{x}(t) + 7\dot{x}(t) + 8x(t)$$

Then H(s) is given by:

Options :

1. ✖ $H(s) = \frac{s^2 + 3s + 4}{2s^2 + 7s + 8}$

2. ✓ $H(s) = \frac{2s^2 + 7s + 8}{s^2 + 3s + 4}$

3. ✗ $H(s) = \frac{s^2 + 7s + 8}{s^2 + 3s + 4}$

4. ✗ $H(s) = \frac{s^2 + 8s + 7}{s^2 + 3s + 4}$

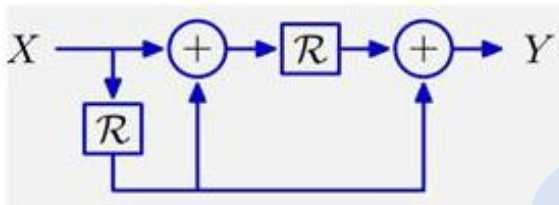
Question Number : 2 Question Id : 231098602 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

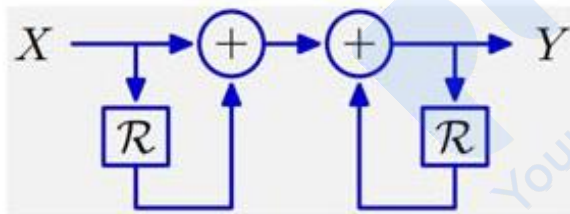
Which of the following systems does NOT have a cyclic signal path?

Options :

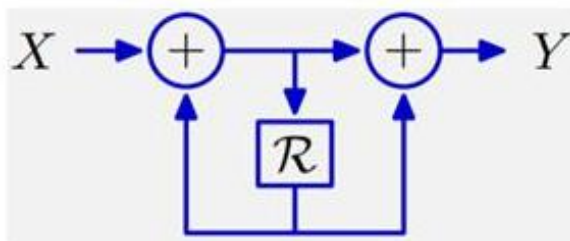
1. ✓



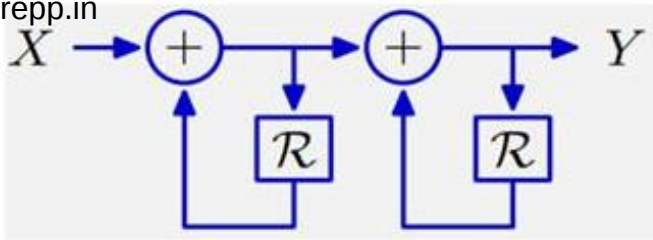
2. ✗



3. ✗



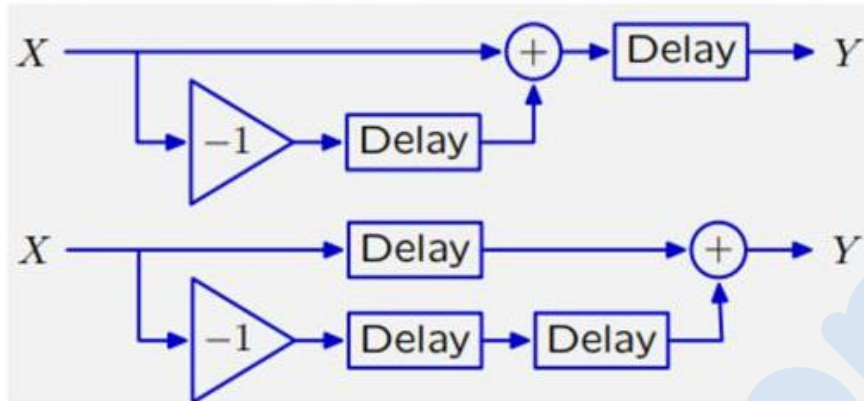
4. ✖



Question Number : 3 Question Id : 231098603 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which mathematical property is obeyed by Operator expressions for these “equivalent” systems (if started “at rest”)?



Options :

1. ✖ Commutate

2. ✖ Transitive

3. ✖ Associative

4. ✔ Distributive

Question Number : 4 Question Id : 231098604 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The transfer function of the given system will be:

$$m\ddot{x} + b\dot{x} + kx = f(t)$$

Options :

1. ✖ $\frac{s}{ms^2 + bs + k}$

2. ✓ $\frac{1}{ms^2 + bs + k}$

3. ✗ $\frac{1}{ms^2 + bs + 1}$

4. ✗ $\frac{s^2}{ms^2 + bs + k}$

Question Number : 5 Question Id : 231098605 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the ROC for the given signal?

$$x_1[n] = \left(\frac{1}{2}\right)^n u[n - 3]$$

Options :

1. ✓ $|z| > \frac{1}{2}$

2. ✗ $|z| < \frac{1}{2}$

3. ✗ $|z| < \frac{1}{3}$

4. ✗ $|z| > \frac{1}{3}$

Question Number : 6 Question Id : 231098606 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Find the inverse transform of:

$$X(z) = \frac{-3z}{2z^2 - 5z + 2}$$

given that the ROC includes the unit circle.

1. ✓ $x[n] = \left(\frac{1}{2}\right)^n u[n] + 2^n u[-1 - n]$

2. ✗ $x[n] = \left(\frac{1}{2}\right)^n u[n] + 2^n u[1 - n]$

3. ✗ $x[n] = \left(\frac{1}{2}\right)^n u[n] + 2^n u[-1 + n]$

4. ✗ $x[n] = \left(\frac{1}{2}\right)^n u[n] + 2^n u[1 + n]$

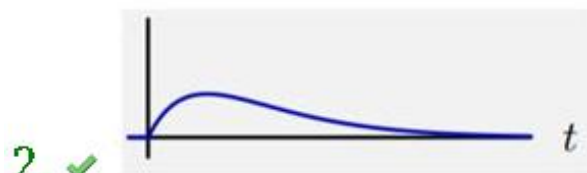
Question Number : 7 Question Id : 231098607 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which plot shows the result of the given convolution?



Options :



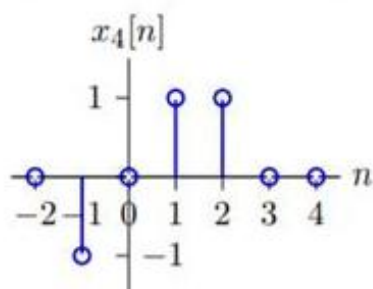
4. ✖



Question Number : 8 Question Id : 231098608 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Z-transform for the given signal will be:



Options :

1. ✔ $-z + z^{-1} + z^{-2}$

2. ✖ $z + z^{-1} + z^{-2}$

3. ✖ $-z + z^{-2} + z^{-3}$

4. ✖ $-z + z^{-1} + 2z^{-2}$

Question Number : 9 Question Id : 231098609 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Consider this variant of the Fibonacci system:

$y[n] = y[n-1] - y[n-2] + x[n]$, where $x[n]$ represents the input and $y[n]$ represents the output. The poles of the given system will be:

Options :

1. ✖ 1,2

2. ✖ 0,1,2

4. ✗ $e^{j\frac{\pi}{2}}, e^{-j\frac{\pi}{2}}, 0$

Question Number : 10 Question Id : 231098610 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The impulse response of a second-order continuous time system has the form:

$h(t) = e^{-\sigma t} \cos(\omega_d t + \varphi) u(t)$, where the parameters σ , ω_d , and φ are related to the parameters of the characteristic polynomial for the system: $s^2 + Bs + C$. Expressions for σ will be:

Options :

1. ✗ 2

2. ✗ B

3. ✓ B/2

4. ✗ B^2

Question Number : 11 Question Id : 231098611 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The Fourier Transform of $x_2(t) = \frac{1}{1+t^2}$ is:

Options :

1. ✓ $\pi e^{-|\omega|}$

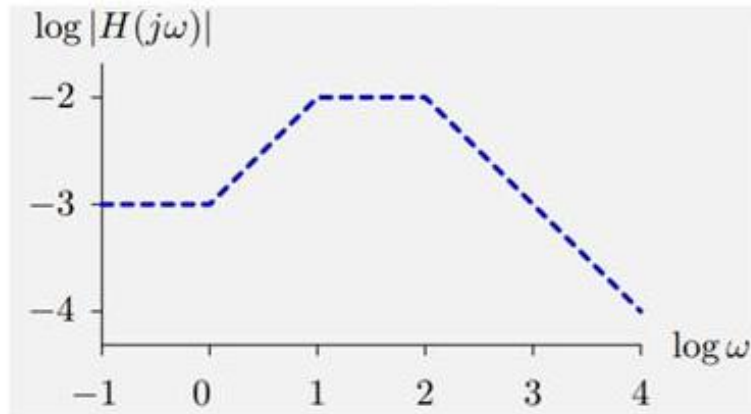
2. ✗ $\pi e^{-|2\omega|}$

3. ✗ $2\pi e^{-|\omega|}$

Question Number : 12 Question Id : 231098612 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following corresponds to the Bode approximation given here?



Options :

1. ✖ $\frac{1}{(s+1)(s+10)(s+100)}$

2. ✔ $\frac{(s+1)}{(s+10)(s+100)}$

3. ✖ $\frac{(s+100)}{(s+1)(s+10)}$

4. ✖ $\frac{(s+10)}{(s+1)(s+100)}$

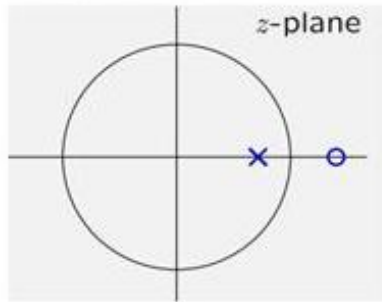
Question Number : 13 Question Id : 231098613 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The pole-zero diagram of the system:

$$H(z) = \frac{1 - az}{z - a}$$

Is represented by:



Identify the type of filter.

Options :

1. ✖ High pass

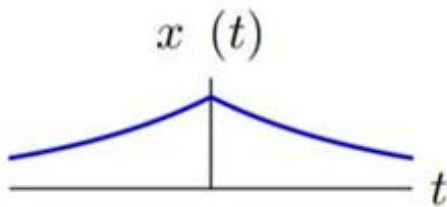
2. ✖ Low pass

3. ✔ All pass

4. ✖ Band pass

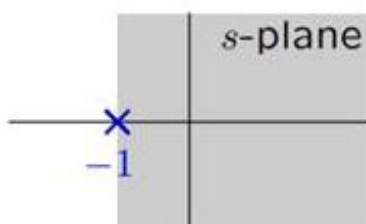
Question Number : 14 Question Id : 231098614 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



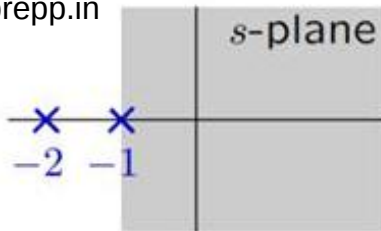
The s-plane representation of x(t) is given by:

Options :

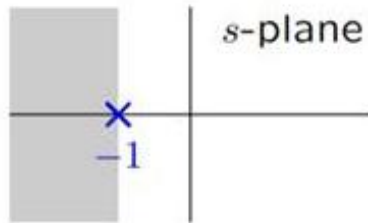


1. ✖

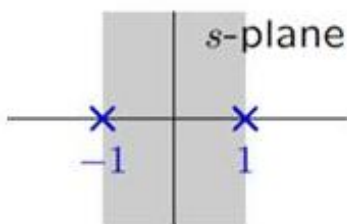
2. ✖



3. ✖



4. ✔



Question Number : 15 Question Id : 231098615 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Signal $x_2(t)$ and its Fourier transform $X_2(j\omega)$ are shown here.



Which of the following is true?

Options :

1. ✖ $b = 4$ and $\omega_0 = 2\pi$

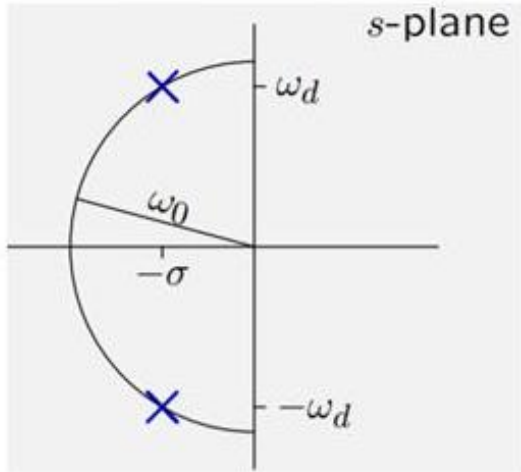
2. ✔ $b = 4$ and $\omega_0 = \pi/2$

3. ✖ $b = 2$ and $\omega_0 = 2\pi$

Question Number : 16 Question Id : 231098616 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Consider the system represented by the following poles.



Find the frequency ω at which the phase of the response $y(t)$ is $-\pi/2$ if $x(t) = \cos \omega t$.

Options :

1. ✖ $0 < \omega < \omega_d$

2. ✖ $\omega > \omega_0$

3. ✖ $\omega = \omega_d$

4. ✔ $\omega = \omega_0$

Question Number : 17 Question Id : 231098617 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For the Discrete Time approximation, determine Discrete Time pole:

$$y_d[n+1] - \left(1 - \frac{T}{\tau}\right)y_d[n] = \frac{T}{\tau}x_d[n]$$

Options :

1. ✔ $z = 1 - \frac{T}{\tau}$

2. ✖ $z = 1 + \frac{T}{\tau}$

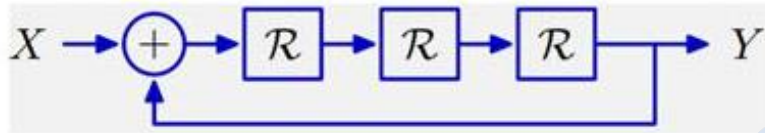
3. ✖ $z = \frac{T}{\tau}$

4. ✖ $z = \frac{\tau}{T}$

Question Number : 18 Question Id : 231098618 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following statements is FALSE for the given system?



Options :

1. ✖ This system has 3 fundamental modes.

2. ✖ All of the fundamental modes can be written as geometrics.

3. ✖ Unit-sample response is $y[n] : 0, 0, 0, 1, 0, 0, 1, 0, 0, 1, 0, 0, 1 \dots$

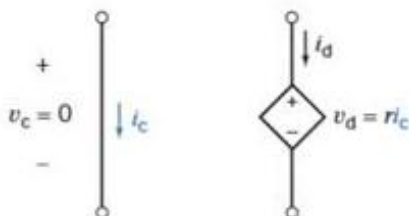
4. ✔ Unit-sample response is $y[n] : 1, 0, 0, 1, 0, 0, 1, 0, 0, 1, 0, 0, 1 \dots$

Question Number : 19 Question Id : 231098619 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

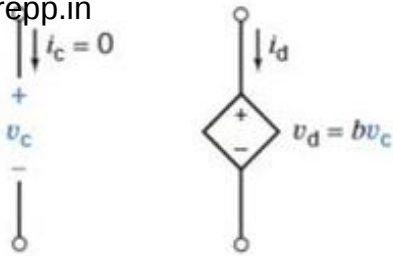
Identify the Current-Controlled Voltage Source (CCVS):

Options :

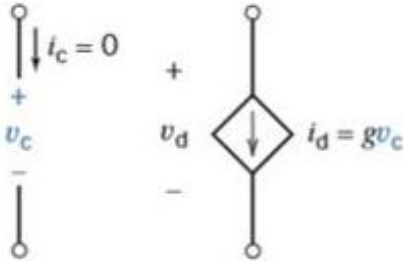


1. ✔

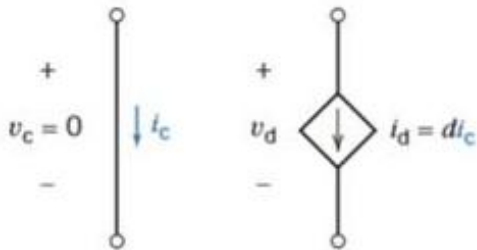
2. ✖



3. ✖



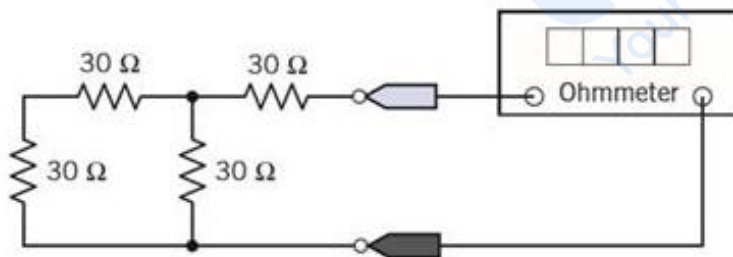
4. ✖



Question Number : 20 Question Id : 231098620 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The resistance measured by the ohmmeter in the figure will be:



Options :

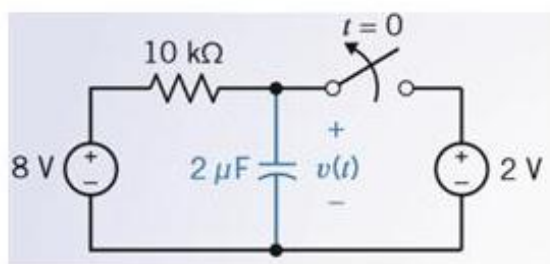
1. ✖ 30 Ω

2. ✔ 50 Ω

3. ✖ 60 Ω

Question Number : 21 Question Id : 231098621 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



The time constant for the given circuit is:

Options :

1. ✖ 2ms

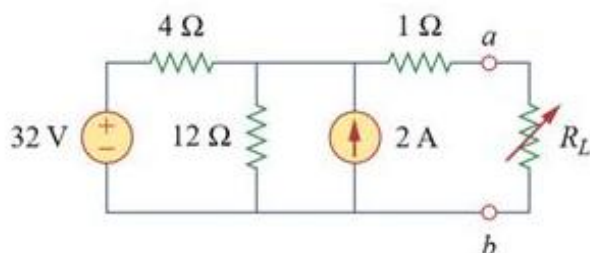
2. ✖ 20 μ s

3. ✔ 20ms

4. ✖ 2 μ s

Question Number : 22 Question Id : 231098622 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



Thevenin's equivalent resistance R_{Th} for the given circuit is:

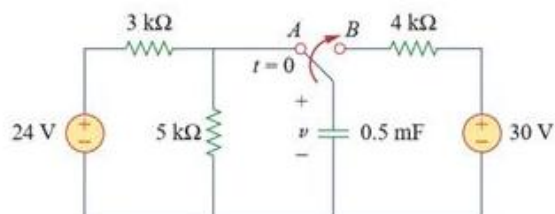
Options :

1. ✖ 1 Ω

2. ✖ 2 Ω

Question Number : 23 Question Id : 231098623 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



For the given circuit, the switch has been in position A for a long time. At $t=0$, the switch moves to B. The voltage across the capacitor just before $t=0$ is $v(0^-)$. So, the value of $v(0^-)$ is:

Options :

1. ✓ 15 V

2. ✗ 0 V

3. ✗ Infinite

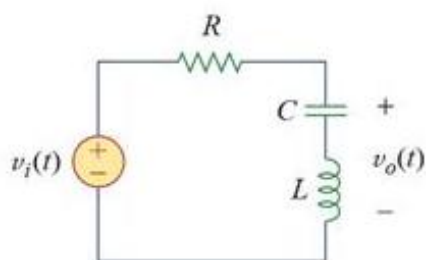
4. ✗ 30 V

Question Number : 24 Question Id : 231098624 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

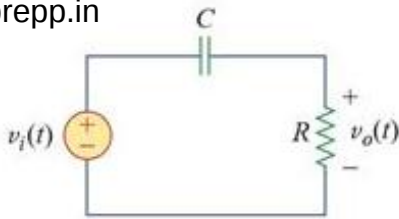
Identify band-stop filter.

Options :

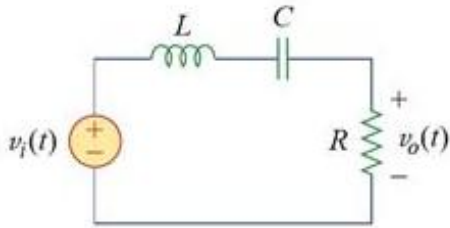


1. ✓

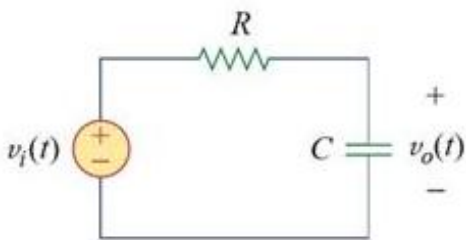
2. ✖



3. ✖



4. ✖



Question Number : 25 Question Id : 231098625 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For a 3-pF capacitor with 20 V across it, the energy stored will be:

Options :

1. ✖ 60 J

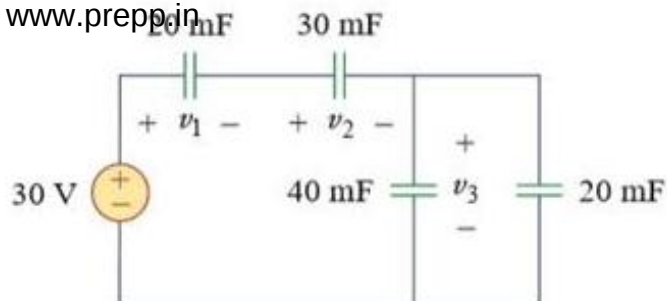
2. ✔ 600 pJ

3. ✖ 60 pJ

4. ✖ 6 J

Question Number : 26 Question Id : 231098626 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



For the given circuit, the value of v_1 is:

Options :

1. ✖ 0 V

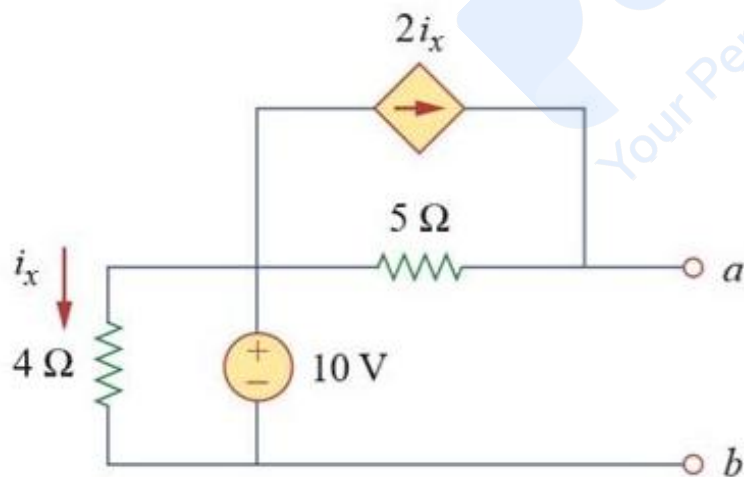
2. ✖ 5 V

3. ✖ 10 V

4. ✔ 15 V

Question Number : 27 Question Id : 231098627 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



Using Norton's theorem, the values of R_N and I_N at the terminals a and b are respectively,

Options :

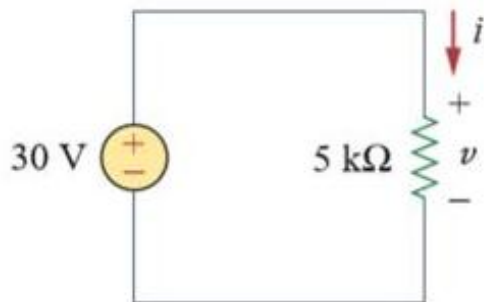
1. ✔ 5 Ω and 7 A

2. ✖ 7 Ω and 5 A

3. ✖ 2.5 Ω and 2 A4. ✖ 2 Ω and 2.5 A

Question Number : 28 Question Id : 231098628 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



The conductance and power for the given circuit, respectively are:

Options :

1. ✖ 0.2 S and 180 mW

2. ✔ 0.2 mS and 180 mW

3. ✖ 0.2 mS and 180 W

4. ✖ 0.2 S and 180 W

Question Number : 29 Question Id : 231098629 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is FALSE for series resonance circuit?

Options :

1. ✖ At resonance power factor of the circuit is unity.

2. ✔ Supply voltage and current are out of phase.

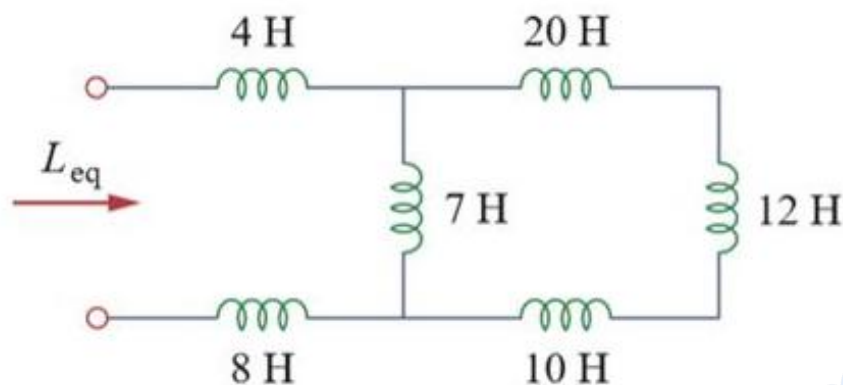
3. ✖ The reactive component of the input impedance is zero.

4. ✖

The voltage across each reactive element is QV , where Q is the quality factor of the element and V is the supply voltage.

Question Number : 30 Question Id : 231098630 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



The L_{eq} for given circuit is:

Options :

1. ✖ 6 H

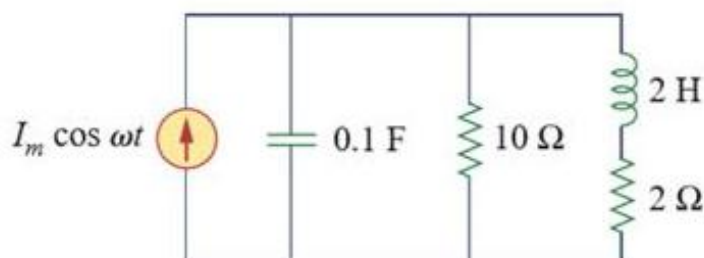
2. ✖ 12 H

3. ✔ 18 H

4. ✖ 42 H

Question Number : 31 Question Id : 231098631 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



The resonant frequency for the given circuit is:

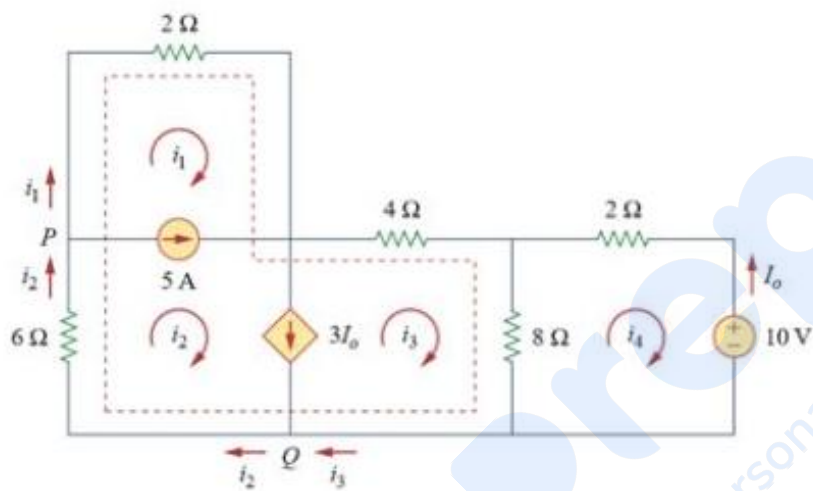
Options :

2. ✔ 2 rad/s

3. ✖ 4 rad/s

4. ✖ 4.5 rad/s

Question Number : 32 Question Id : 231098632 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66



The mesh currents i_1 and i_3 , respectively are:

Options :

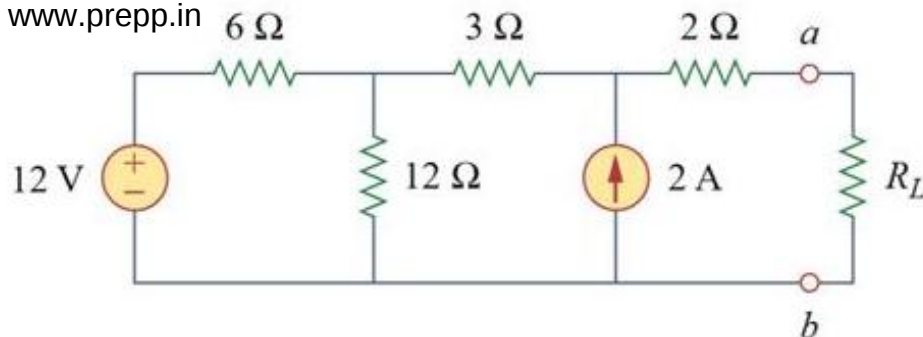
1. ✖ -2.5 A and 2.143 A

2. ✔ -7.5 A and 3.93 A

3. ✖ 3.93 A and -7.5 A

4. ✖ 2.143 A and -2.5 A

Question Number : 33 Question Id : 231098633 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66



For maximum power transfer in the circuit, the value of R_L and maximum power, respectively are:

Options :

1. ✓ $9\ \Omega$ and $13.44\ \text{W}$

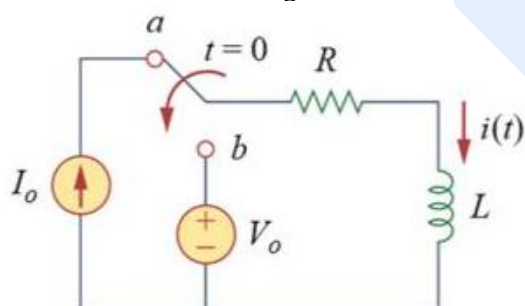
2. ✗ $5\ \Omega$ and $13.44\ \text{W}$

3. ✗ $9\ \Omega$ and $9.33\ \text{W}$

4. ✗ $5\ \Omega$ and $9.33\ \text{W}$

Question Number : 34 Question Id : 231098634 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



In the given circuit, the switch moves from position a to position b at $t=0$. The expression of $i(t)$ for $t>0$ is given by:

Options :

1. ✓ $i(t) = \frac{V_0}{R} \left(1 - e^{-\frac{t}{\tau}} \right)$

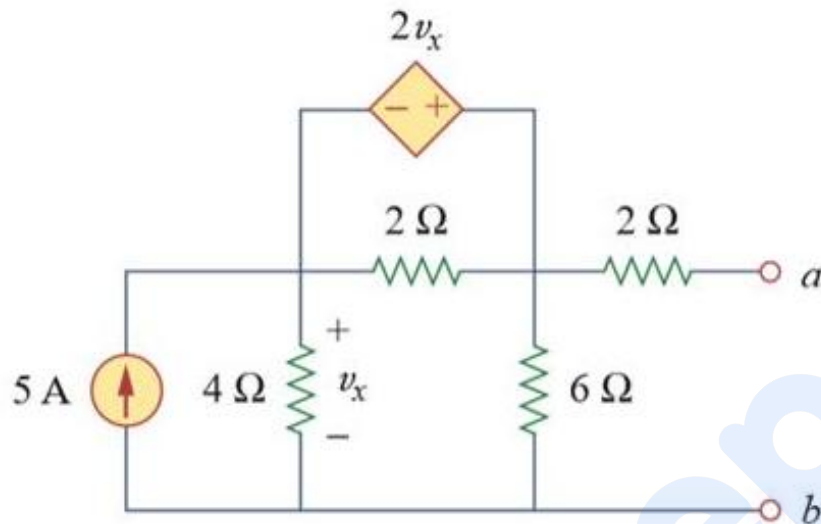
2. ✗ $i(t) = \frac{V_0}{R} \left(1 - e^{-\frac{2t}{\tau}} \right)$

3. ✖ $i(t) = \frac{V_0}{2R} \left(1 - e^{\frac{-t}{\tau}} \right)$

4. ✖ $i(t) = \frac{V_0}{R} \left(1 - e^{\frac{-t}{2\tau}} \right)$

Question Number : 35 Question Id : 231098635 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



For Thevenin's theorem, find V_{Th} at terminals a-b.

Options :

1. ✖ 6 V

2. ✖ 12 V

3. ✖ 15 V

4. ✔ 20 V

Question Number : 36 Question Id : 231098636 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Find the value of h_{11} if:

$$Z = \begin{bmatrix} 18 & 6 \\ 6 & 9 \end{bmatrix}$$

Options :

1. ✓ 1/4

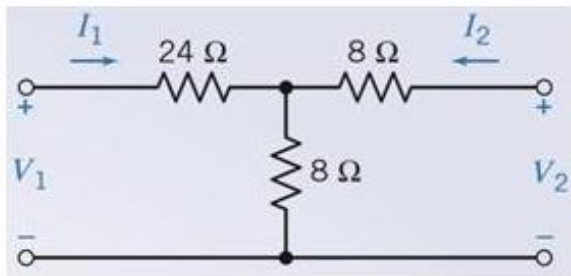
2. ✗ 2/3

3. ✗ -2/3

4. ✗ 1/9

Question Number : 37 Question Id : 231098637 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



Determine Y_{12} for the above circuit.

Options :

1. ✗ $\frac{1}{56} S$

2. ✓ $-\frac{1}{56} S$

3. ✗ $\frac{1}{14} S$

4. ✗ $-\frac{1}{14} S$

Question Number : 38 Question Id : 231098638 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A typical 8 pin op-amp has pin number 6 as the:

1. ✖ inverting input

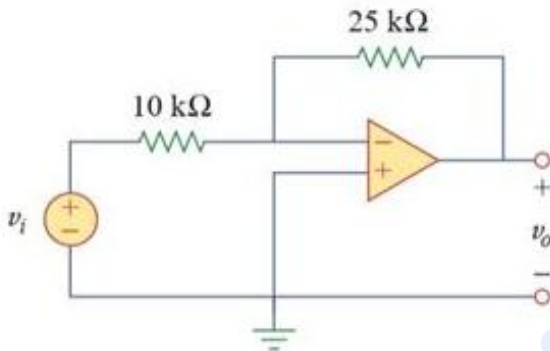
2. ✖ noninverting input

3. ✔ output

4. ✖ positive power supply

Question Number : 39 Question Id : 231098639 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



For the given circuit, if $v_i = 0.5$ V, the value of v_o will be:

Options :

1. ✖ -2.5 V

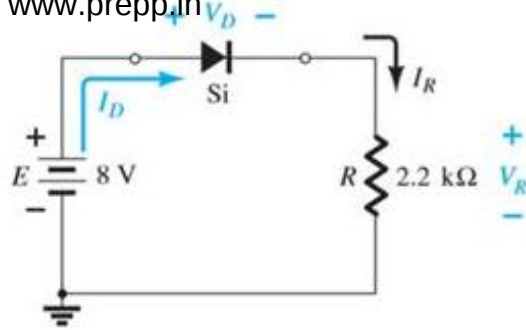
2. ✔ -1.25 V

3. ✖ 2.5 V

4. ✖ 1.25 V

Question Number : 40 Question Id : 231098640 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



For the given circuit, the value of I_D is:

Options :

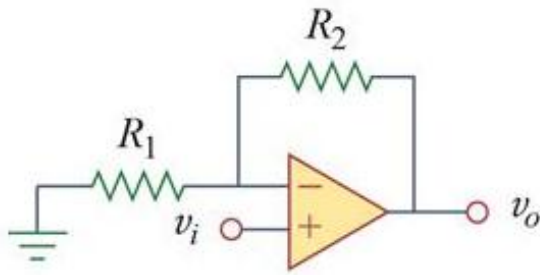
1. ✗ $\approx 0.7 \text{ mA}$
2. ✗ $\approx 7.3 \text{ mA}$
3. ✓ $\approx 3.32 \text{ mA}$
4. ✗ $\approx 8.32 \text{ mA}$

Question Number : 41 Question Id : 231098641 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

Which of the following holds FALSE for BJTs?

Options :

1. ✗
The quantity beta (β) provides an important relationship between the base and collector currents, and is usually between 50 and 400.
2. ✓
The impedance between terminals of a forward-biased junction is always relatively large, whereas the impedance between terminals of a reverse-biased junction is usually quite small.
3. ✗ The dc beta is defined by a simple ratio of dc currents at an operating point.
4. ✗ The quantity alpha (α) relates the collector and emitter currents and is always close to one.

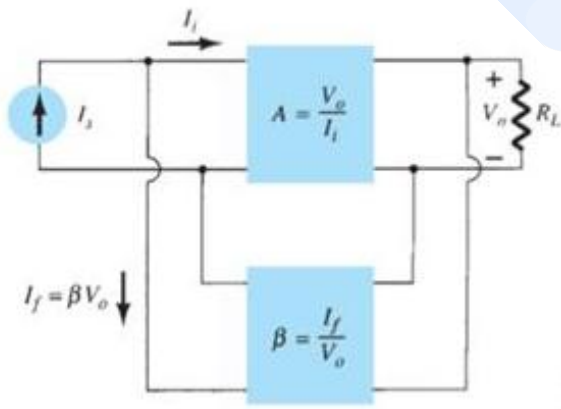


The given circuit represents a/an:

Options :

1. ✗ inverting amplifier
2. ✓ noninverting amplifier
3. ✗ voltage follower
4. ✗ difference amplifier

Question Number : 43 Question Id : 231098643 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
 Option Orientation : Vertical
 Correct Marks : 2 Wrong Marks : 0.66



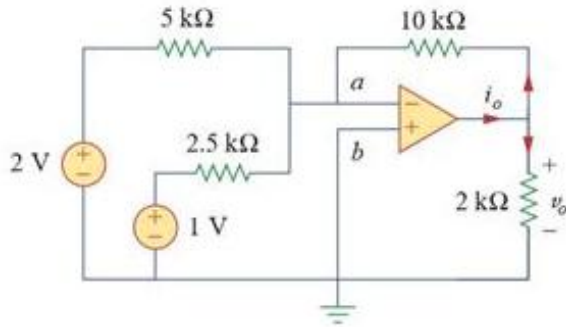
The given circuit represents the amplifier type as:

Options :

1. ✗ voltage-series feedback
2. ✓ voltage-shunt feedback

Question Number : 44 Question Id : 231098644 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



v_o for the above op-amp circuit is:

Options :

1. ✔ -8 V

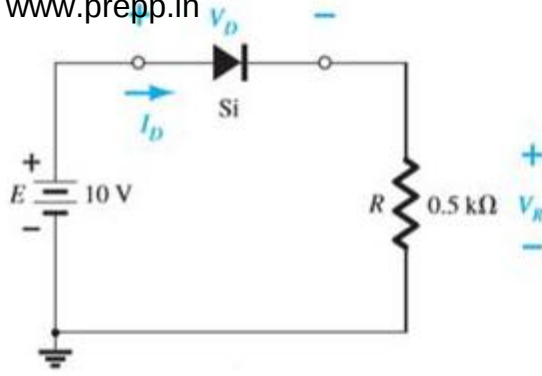
2. ✖ -4 V

3. ✖ 8 V

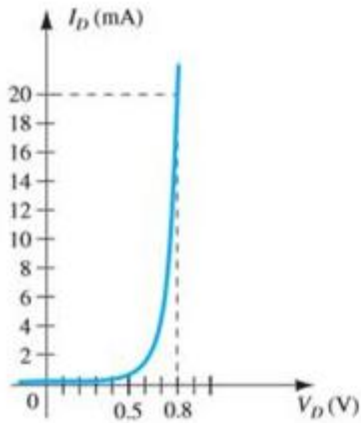
4. ✖ 4 V

Question Number : 45 Question Id : 231098645 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



For the series diode configuration of above figure, employing the diode characteristics shown below:



The value of V_R is:

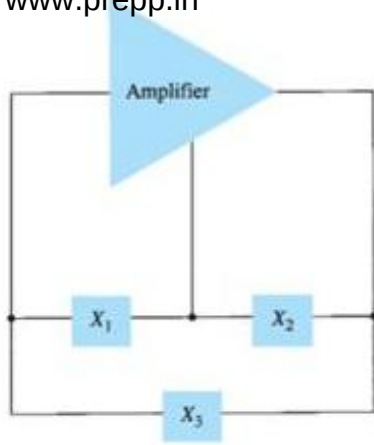
Options :

1. ✓ ≈ 9.2 V

2. ✗ ≈ 0.7 V

3. ✗ ≈ 2.5 V

4. ✗ ≈ 12 V



For a Hartley Oscillator, X_1 , X_2 and X_3 respectively are:

Options :

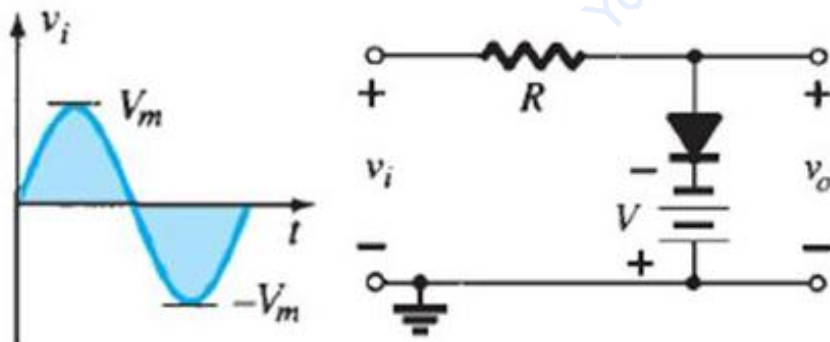
1. ✓ L,L,C

2. ✗ C,C,L

3. ✗ L,C,L

4. ✗ LC,L,C

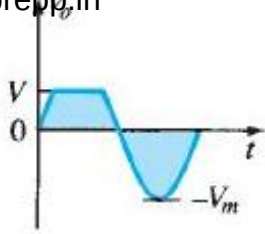
Question Number : 47 Question Id : 231098647 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66



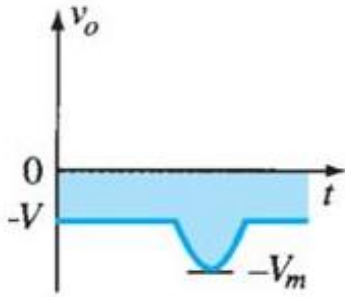
The output of the given circuit, assuming ideal diode, is:

Options :

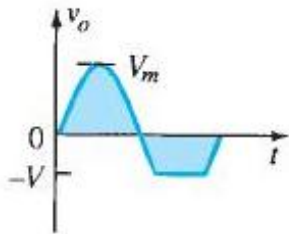
1. ✖



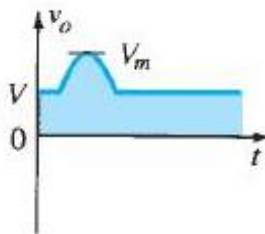
2. ✔



3. ✖

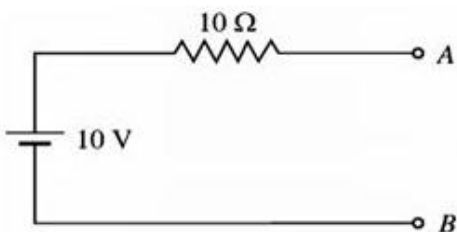


4. ✖



Question Number : 48 Question Id : 231098648 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



For the above constant voltage configuration, the equivalent constant current source configuration will have:

Options :

1. ✖ $I = 1 \text{ A}$ and $R = 10 \Omega$ in series

2. ✓ $I = 1 \text{ A}$ and $R = 10 \Omega$ in parallel

3. ✗ $I = 10 \text{ A}$ and $R = 1 \Omega$ in series

4. ✗ $I = 10 \text{ A}$ and $R = 1 \Omega$ in parallel

Question Number : 49 Question Id : 231098649 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The primary application of zener diode is in:

Options :

1. ✗ amplifiers

2. ✗ oscillators

3. ✓ voltage regulators

4. ✗ rectifiers

Question Number : 50 Question Id : 231098650 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Current amplification factor for a common base connection is 0.5. What is the value of base current if emitter current is 1 mA ?

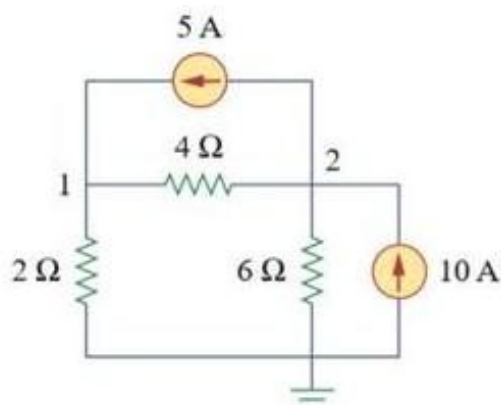
Options :

1. ✓ 0.5 mA

2. ✗ 0 mA

3. ✗ 0.1 mA

Question Number : 51 Question Id : 231098651 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66



The voltage at nodes 1 and 2, respectively are:

Options :

1. ✖ 13.33 V and 20 V

2. ✖ 20 V and 13.33 V

3. ✔ 6.66 V and 12 V

4. ✖ 12 V and 6.66 V

Question Number : 52 Question Id : 231098652 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

Which of the following holds FALSE for MOSFETs?

Options :

1. ✖

There is no direct electrical connection between the gate terminal and the channel of a MOSFET.

2. ✖

For values of V_{GS} less than the threshold level, the drain current of an enhancement type MOSFET is 0 mA.

It is the insulating layer of SiO_2 in the MOSFET construction that accounts for the very desirable high input impedance of the device.

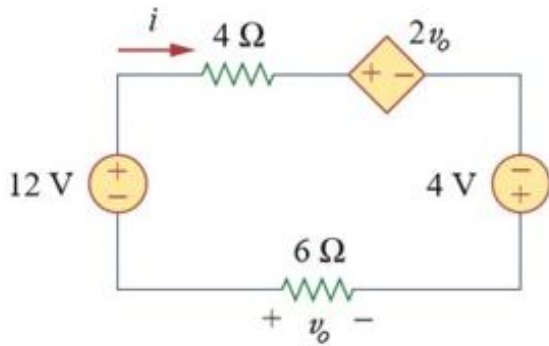
4. ✓

The arrow in the symbol of n -channel JFETs or MOSFETs will always point out of the centre of the symbol.

Question Number : 53 Question Id : 231098653 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Determine v_o for the given circuit.



Options :

1. ✓ 48V

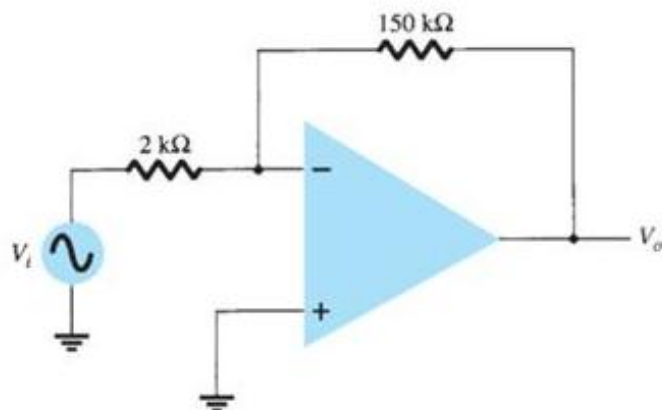
2. ✗ 24V

3. ✗ 12V

4. ✗ 96V

Question Number : 54 Question Id : 231098654 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



Options :

1. ✗ 76 mV

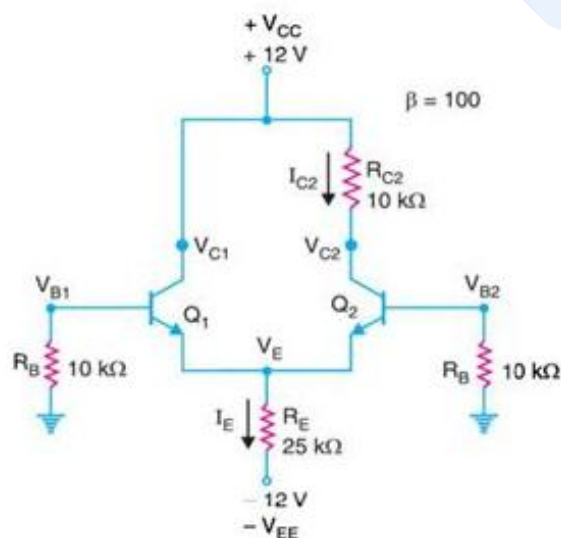
2. ✗ 15.7 mV

3. ✓ 91.2 mV

4. ✗ 101.5 mV

Question Number : 55 Question Id : 231098655 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



For the differential amplifier circuit shown here, V_{C1} and V_{C2} are respectively;

Options :

1. ✗ 12 V and 2.7 V

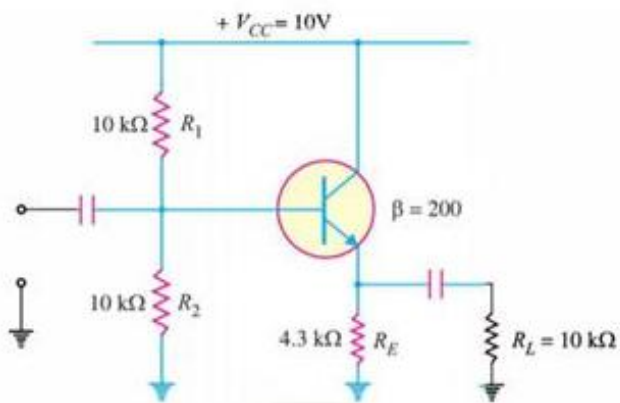
2. ✓ 12 V and 9.7 V

3. ✗ -12 V and 2.7 V

4. ✗ -12 V and 9.7 V

Question Number : 56 Question Id : 231098656 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



For the emitter follower circuit shown here, the ac emitter resistance is:

Options :

1. ✗ 10 Ω

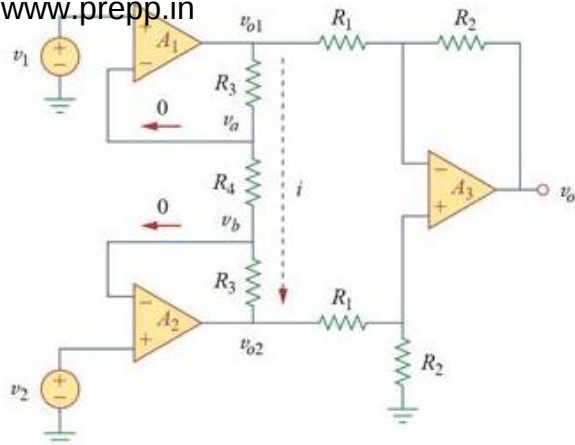
2. ✗ 20 Ω

3. ✓ 25 Ω

4. ✗ 30 Ω

Question Number : 57 Question Id : 231098657 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



The instrument amplifier shown here is an amplifier of low level signals used in process control and commercially available in single-package units. v_o for the instrument amplifier is:

Options :

1. ✖ $v_o = \frac{R_2}{R_1} \left(1 + \frac{R_3}{2R_4} \right) (v_2 - v_1)$

2. ✔ $v_o = \frac{R_2}{R_1} \left(1 + \frac{2R_3}{R_4} \right) (v_2 - v_1)$

3. ✖ $v_o = \frac{R_2}{R_1} \left(1 + \frac{R_3}{R_4} \right) (v_2 - v_1)$

4. ✖ $v_o = \frac{R_2}{R_1} \left(1 + \frac{2R_4}{R_3} \right) (v_2 - v_1)$

Question Number : 58 Question Id : 231098658 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A pole at the origin and a zero at $\frac{-K_i}{K_p}$ are added in:

Options :

1. ✖ proportional control

2. ✖ integral control

3. ✓ proportional + integral control

4. ✗ proportional + derivative control

Question Number : 59 Question Id : 231098659 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Find transfer function $G(s)=C(s)/R(s)$ for the differential equation:

$$\frac{d^3 c}{dt^3} + 3 \frac{d^2 c}{dt^2} + 7 \frac{dc}{dt} + 5c = \frac{d^2 r}{dt^2} + 4 \frac{dr}{dt} + 3r$$

Options :

1. ✗ $\frac{s^2 + 3}{3s^2 + 7s + 5}$

2. ✗ $\frac{s^2 + 4s + 3}{3s^3 + 4s^2 + 7s + 5}$

3. ✗ $\frac{s^2 + 2}{s^3 + 2s^2 + 6s + 5}$

4. ✓ $\frac{s^2 + 4s + 3}{s^3 + 3s^2 + 7s + 5}$

Question Number : 60 Question Id : 231098660 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is true for a lead compensator?

Options :

1. ✓ Improves the transient response

2. ✗ Improves the steady-state performance

3. ✖ Slower settling time

4. ✖ Improves the transient and steady-state response

Question Number : 61 Question Id : 231098661 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The charge q in the electrical systems is analogous to which thermal system quantity?

Options :

1. ✔ Heat flow

2. ✖ Temperature

3. ✖ Resistance

4. ✖ Capacitance

Question Number : 62 Question Id : 231098662 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In mechanical translational system, mass is analogous to which rotational system component?

Options :

1. ✖ Torque

2. ✔ Moment of inertia

3. ✖ Angular displacement

4. ✖ Angular velocity

Question Number : 63 Question Id : 231098663 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Options :

1. ✓ $1/(1+K)$

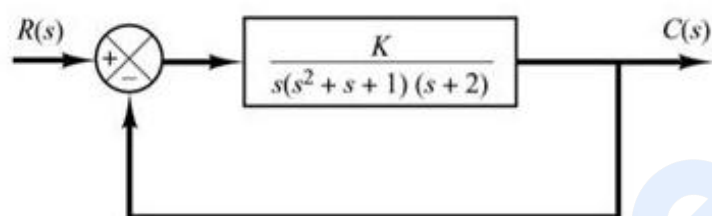
2. ✗ 0

3. ✗ ∞

4. ✗ $1/K$

Question Number : 64 Question Id : 231098664 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



For the given system, the range of K for stability is:

Options :

1. ✓ $\frac{14}{9} > K > 0$

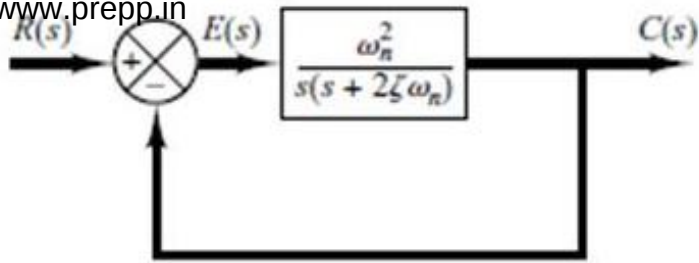
2. ✗ $\frac{14}{9} < K < 0$

3. ✗ $\frac{9}{7} > K > 0$

4. ✗ $\frac{9}{7} < K < 0$

Question Number : 65 Question Id : 231098665 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66



For the system shown in the fig. $\zeta=0.4$ and $\omega_n=5$ rad/sec. Rise time t_r is:

Options :

1. ✓ 0.43 sec

2. ✗ 0.78 sec

3. ✗ 0.55 sec

4. ✗ 0.22 sec

Question Number : 66 Question Id : 231098666 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For the transfer function $T(s) = \frac{5}{s^2 + 7s + 10}$, the steady state error for unit step and ramp inputs are respectively:

Options :

1. ✓ 1/2 and ∞

2. ✗ ∞ and 1/2

3. ✗ 0 and ∞

4. ✗ ∞ and 0

Question Number : 67 Question Id : 231098667 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For a system having $G(s) = \frac{25}{s(s+10)}$, and unity feedback, the value of ω_d is:

Options :

1. ✓ 0

2. ✗ 1

3. ✗ 5

4. ✗ 10

Question Number : 68 Question Id : 231098668 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Steady state error for a parabolic input for type 2 system is given by:

Options :

1. ✓ $1/K_a$ 2. ✗ K_a

3. ✗ 0

4. ✗ ∞

Question Number : 69 Question Id : 231098669 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Determine the points/point where the root loci cross the imaginary axis for the given characteristic equation:

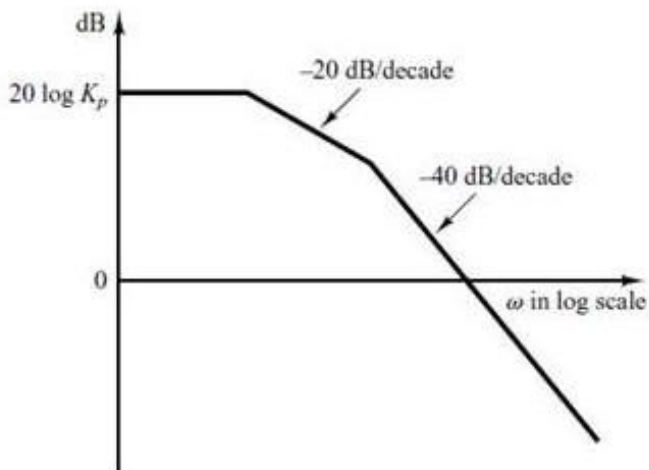
$$s^3 + 3s^2 + 2s + K = 0$$

Options :

1. ✗ $\omega = \pm 2$ 2. ✗ $\omega = \sqrt{2}$

4. ✗ $\omega = -\sqrt{2}$

Question Number : 70 Question Id : 231098670 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66



The type of system shown in the bode plot here is:

Options :

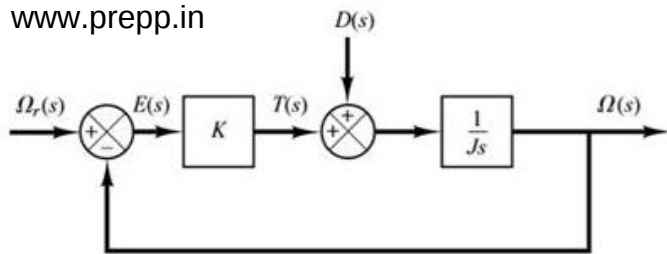
1. ✗ 3

2. ✗ 1

3. ✗ 2

4. ✓ 0

Question Number : 71 Question Id : 231098671 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66



Given figure shows a speed control system in which the output member of the system is subject to a torque disturbance.

In the diagram, $\Omega_r(s)$, $\Omega(s)$, $T(s)$ and $D(s)$ are the Laplace transforms of the reference speed, output speed, driving torque and disturbance torque, respectively. In the absence of a disturbance torque, the output speed is equal to the reference speed. Assume that the reference input is zero, the steady-state output velocity for a unit-step disturbance torque is given by:

Options :

1. ✓ $1/K$

2. ✗ K

3. ✗ $K/2$

4. ✗ $K/4$

Question Number : 72 Question Id : 231098672 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The effect of feedback on input and output impedance for a voltage-series connection, respectively is:

Options :

1. ✗ increasing, increasing

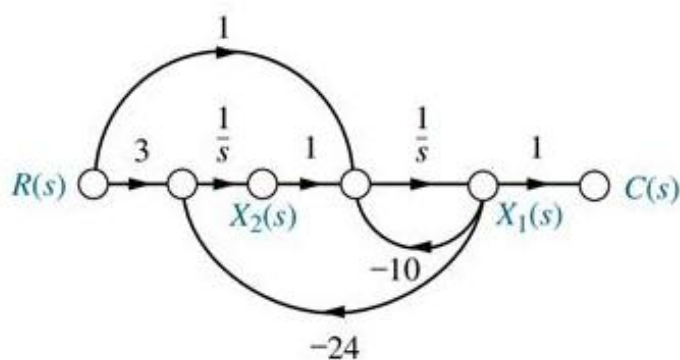
2. ✗ decreasing, increasing

3. ✓ increasing, decreasing

4. ✗ decreasing, decreasing

Question Number : 73 Question Id : 231098673 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

The state space representation of the SFG given here is:



Options :

1. ✓ $\dot{x} = \begin{bmatrix} -10 & 1 \\ -24 & 0 \end{bmatrix} x + \begin{bmatrix} 1 \\ 3 \end{bmatrix} r ; y = [1 \ 0]x$

2. ✗ $\dot{x} = \begin{bmatrix} -1 & 1 \\ -4 & 24 \end{bmatrix} x + \begin{bmatrix} 1 \\ -3 \end{bmatrix} r ; y = [-1 \ 0]x$

3. ✗ $\dot{x} = \begin{bmatrix} -10 & -24 \\ 1 & 0 \end{bmatrix} x + \begin{bmatrix} 1 \\ 0 \end{bmatrix} r ; y = [1 \ 3]x$

4. ✗ $\dot{x} = \begin{bmatrix} -1 & -4 \\ 1 & 24 \end{bmatrix} x + \begin{bmatrix} -1 \\ 0 \end{bmatrix} r ; y = [1 \ -3]x$

Question Number : 74 Question Id : 231098674 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For a unity feedback system having the forward transfer function $G(s) = \frac{k(s+2)}{(s^2-4s+13)}$, find the angle of departure from complex poles.

Options :

1. ✗ -211.3°

2. ✗ 313.4°

3. ✓ -233.1°

Question Number : 75 Question Id : 231098675 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Find the points at which the root locus crosses the $j\omega$ axis for the unity feedback system with feedforward transfer function.

$$G(s) = \frac{K}{(s^2 + 2s + 2)(s^2 + 2s + 5)}$$

Options :

1. ✖ ± 2.1042

2. ✔ ± 1.8708

3. ✖ ± 1.3615

4. ✖ ± 2.6214

Question Number : 76 Question Id : 231098676 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If $(4310)_x = (580)_{10}$, then the value of x is:

Options :

1. ✖ 4

2. ✔ 5

3. ✖ 8

4. ✖ 7

Question Number : 77 Question Id : 231098677 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The simplification of $AC + \bar{A}BC$ is:

Options :

1. ✖ $A + BC$

2. ✖ $AC + \bar{A}B$

3. ✖ BC

4. ✔ $(A + B)C$

Question Number : 78 Question Id : 231098678 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The complement of $(A + B)(A + \bar{B})$ is:

Options :

1. ✖ $\bar{B}$

2. ✔ $\bar{A}$

3. ✖ 1

4. ✖ A

Question Number : 79 Question Id : 231098679 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is output 'Z' of an Ex-OR gate, where all inputs are set at $\bar{A}$

Options :

1. ✖ $Z = A$

2. ✖ $Z = \bar{A}$

3. ✖ $Z = 1$

4. ✔ $Z = 0$

Question Number : 80 Question Id : 231098680 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The 2'S complement of -9 is:

Options :

1. ✖ 11001

2. ✖ 00111

3. ✔ 10111

4. ✖ 10110

Question Number : 81 Question Id : 231098681 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Ring, shift and Johnson Counters are:

Options :

1. ✔ Synchronous Counter

2. ✖ Asynchronous Counter

3. ✖ True Binary Counter

4. ✖ Synchronous and true Binary Counter

Question Number : 82 Question Id : 231098682 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Options :

1. ✖ Binary code

2. ✖ Excess-3 code

3. ✖ ASCII code

4. ✔ Gray code

Question Number : 83 Question Id : 231098683 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following represents D Flip-Flop?

Options :

1. ✖ Data Flip-Flop

2. ✔ Delay Flip-Flop

3. ✖ Direct Flip-Flop

4. ✖ Decoder Flip-Flop

Question Number : 84 Question Id : 231098684 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the minimum number of universal gates needed to realise full subtractor?

Options :

1. ✖ 8

2. ✔ 9

3. ✖ 10

4. ✖ 11

Question Number : 85 Question Id : 231098685 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The fastest logic family is:

Options :

1. ✖ TTL

2. ✖ NMOS

3. ✖ CMOS

4. ✔ ECL

Question Number : 86 Question Id : 231098686 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A Schmitt trigger is a digital circuit that produces

Options :

1. ✖ Rectangular output when the input is sinusoidal

2. ✖ Sinusoidal output when the input is rectangular

3. ✖ Square output when the input is trapezoidal

4. ✔ Rectangular output regardless of the input waveform

Question Number : 87 Question Id : 231098687 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Options :

1. ✖ Unity gain inverting voltage amplifier
2. ✔ Unity gain non inverting voltage amplifier
3. ✖ Unity gain inverting current amplifier
4. ✖ Unity gain non inverting current amplifier

Question Number : 88 Question Id : 231098688 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is the correct answer when $(11010)_2$ is subtracted from $(11100)_2$ by using the 1's complement method?

Options :

1. ✖ 01001
2. ✖ 00001
3. ✖ 10001
4. ✔ 00010

Question Number : 89 Question Id : 231098689 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The conversion time for a 10-bit successive approximation A/D converter, for a clock frequency of 1MHz, is:

Options :

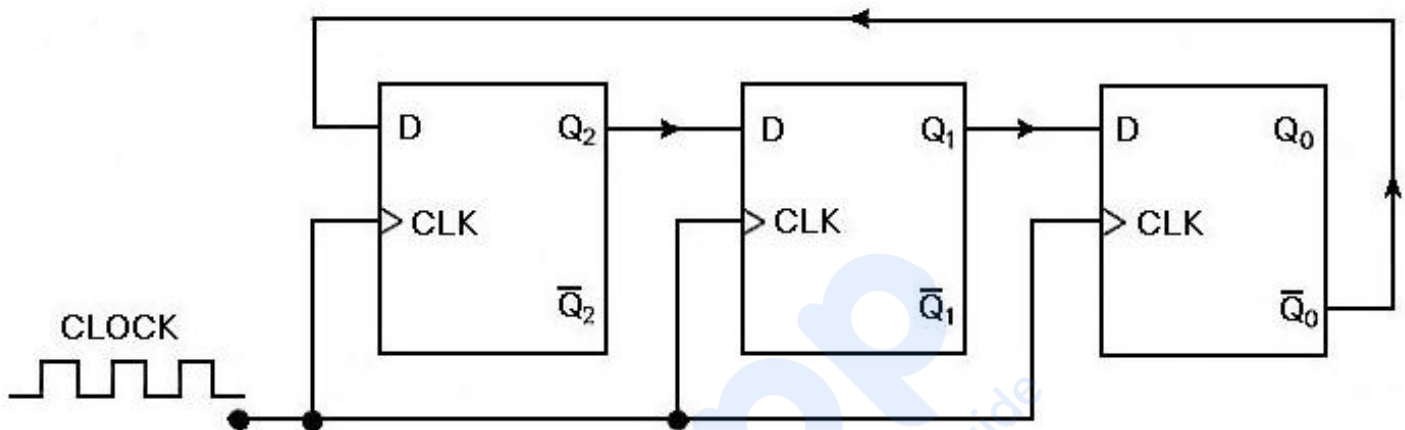
1. ✖ 1 μ s
2. ✔ 10 μ s

3. ✖ 0.1 μ s

4. ✖ 0.01 μ s

Question Number : 90 Question Id : 231098690 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

The circuit shown in diagram is



Options :

1. ✖ Ring counter

2. ✖ Ripple counter

3. ✔ Johnson counter

4. ✖ Mod-8 up counter

Question Number : 91 Question Id : 231098691 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

Which of the following logic gates dissipates minimum power?

Options :

1. ✖ RTL

2. ✖ TTL

3. ✔ MOS

4. ✖ ECL

Question Number : 92 Question Id : 231098692 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The minterm expansion of $F = AB + B\bar{C} + A\bar{C}$ is is:

Options :

1. ✔ $m_2 + m_4 + m_6 + m_7$

2. ✖ $m_0 + m_1 + m_3 + m_5$

3. ✖ $m_7 + m_6 + m_2 + m_4$

4. ✖ $m_2 + m_3 + m_4 + m_5$

Question Number : 93 Question Id : 231098693 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which statement is not true for RAM and ROM?

Options :

1. ✖ Data can be read from any address in either RAM or a ROM

2. ✖ Data can be written into a RAM at any address

3. ✖ Read cycle for both devices are similar

Question Number : 94 Question Id : 231098694 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The worst case input voltage (V_{IL} for low input and V_{IH} for high input) and the worst case output voltage (V_{OL} for low output and V_{OH} for high output) for 7400 TTL are:

Options :

1. ✓ $V_{IL,max} = 0.8V, V_{IH,min} = 2V, V_{OL,max} = 0.4V, V_{OH,min} = 2.4V$

2. ✗ $V_{IL,max} = 0.6V, V_{IH,min} = 2V, V_{OL,max} = 0.4V, V_{OH,min} = 2.8V$

3. ✗ $V_{IL,max} = 0.4V, V_{IH,min} = 2.4V, V_{OL,max} = 0.8V, V_{OH,min} = 2V$

4. ✗ $V_{IL,max} = 0.4V, V_{IH,min} = 2.8V, V_{OL,max} = 0.6V, V_{OH,min} = 2V$

Question Number : 95 Question Id : 231098695 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A moving iron instrument operates on:

Options :

1. ✗ DC only

2. ✗ AC only

3. ✓ both DC and AC

4. ✗ complex wave AC only

Question Number : 96 Question Id : 231098696 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The function of the Q-meter is to measure:

Options :

2. ✖ inductance

3. ✔ quality factor of capacitor and inductor

4. ✖ quality factor and form factor of capacitor and inductor

Question Number : 97 Question Id : 231098697 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In Electronics Voltmeter (EVM), Buffer amplifier is used to?

Options :

1. ✖ Increase the current amplification.

2. ✖ Decrease the current amplification.

3. ✖ Decrease the Loading Capacity.

4. ✔ Increase the Loading Capacity.

Question Number : 98 Question Id : 231098698 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In a DC Wheatstone bridge, the current through the galvanometer at balance condition is:

Options :

1. ✖ 1.08 A

2. ✔ 0.0 A

3. ✖ 1.414 A

4. ✖ 1.732 A

Question Number : 99 Question Id : 231098699 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If an ammeter is used as a voltmeter, in all probability it will:

Options :

1. ✖ Indicate much higher reading

2. ✖ give extremely low reading

3. ✖ indicate no reading at all

4. ✔ burn out

Question Number : 100 Question Id : 231098700 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

While measuring resistance by the voltmeter-ammeter method, the maximum possible percentage errors in the voltmeter and ammeter are $\pm 1.4\%$ and $\pm 1.1\%$ respectively. Then the maximum possible percentage error in the value of resistance will be:

Options :

1. ✔ $\pm 2.5\%$ 2. ✖ $\pm 3\%$ 3. ✖ $\pm 0.3\%$ 4. ✖ $\pm 1.5\%$

Correct Marks : 2 Wrong Marks : 0.66

The resistance of a circuit is measured from the current flowing through and power fed to that circuit. The uncertainty in current and power are $\pm 1\%$ and $\pm 2\%$ respectively. The uncertainty in the measurement of resistance is:

Options :

1. ✖ $\pm 2\%$

2. ✖ $\pm 3\%$

3. ✔ $\pm 4\%$

4. ✖ $\pm 5\%$

Question Number : 102 Question Id : 231098702 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If the maximum value of voltage is 8 V and the minimum value of voltage is 2 V in a standing wave pattern, the standing wave ratio is:

Options :

1. ✔ 1.66

2. ✖ 0.6

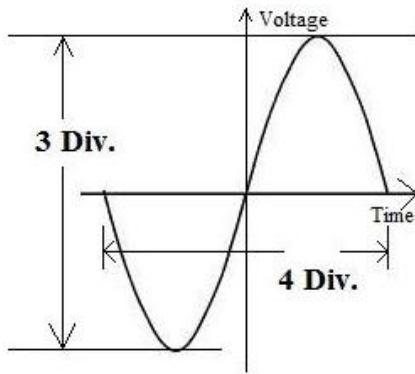
3. ✖ 1.33

4. ✖ 2.33

Question Number : 103 Question Id : 231098703 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

www.prepp.in shown in the given figure is observed on the screen of an oscilloscope. If the vertical attenuation is set to 2.5 V/div, determine the maximum amplitude of the signal.



Options :

1. ✓ 3.75 V

2. ✗ 5 V

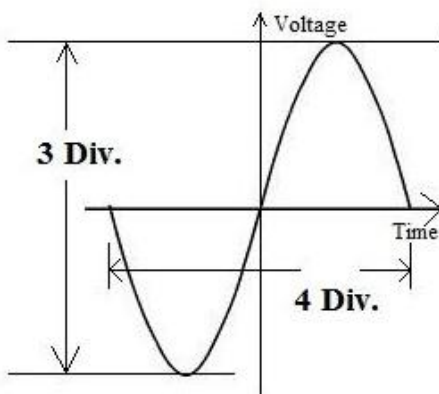
3. ✗ 7.5 V

4. ✗ 10 V

Question Number : 104 Question Id : 231098704 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The waveform shown in the below figure is observed on the screen of an oscilloscope. If the time/div is set to 2.5 μ s/div, determine the frequency of the signal.



Options :

1. ✓ 100 KHz

2. ✖ 125 KHz

3. ✖ 150 KHz

4. ✖ 200 KHz

Question Number : 105 Question Id : 231098705 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Statement 1: The range of an ammeter can be extended by using a low shunt resistor.

Statement 2: The range of a voltmeter can be extended by using a high shunt resistor.

Which of the following is the correct option in regard to these statements?

Options :

1. ✖ Both the statements 1 and 2 are true.

2. ✖ Both the statements 1 and 2 are false.

3. ✔ Statement 1 is true but statement 2 is false.

4. ✖ Statement 1 is false but statement 2 is true.

Question Number : 106 Question Id : 231098706 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Kelvin's Double Bridge is used for the measurement of:

Options :

1. ✔ low resistance

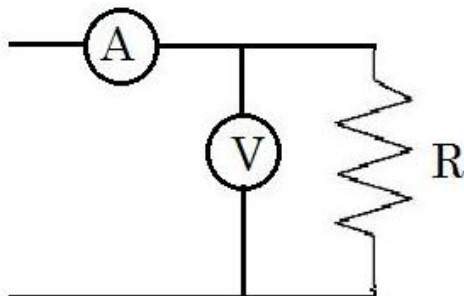
2. ✖ high resistance

3. ✖ insulator resistance

Question Number : 107 Question Id : 231098707 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The ammeter in the following circuit indicates 1 A and the voltmeter of resistance $1\text{ k}\Omega$ reads 100 V. The value of R is:



Options :

1. ✖ $1\ \Omega$

2. ✖ $1\text{ k}\Omega$

3. ✔ $111\ \Omega$

4. ✖ $100\ \Omega$

Question Number : 108 Question Id : 231098708 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If power is measured using two-wattmeter method with unity power factor, then:

Options :

1. ✖ one of the wattmeters will read zero

2. ✔ both the wattmeters will have the same reading

3. ✖ the reading of one wattmeter will be two times the other

Question Number : 109 Question Id : 231098709 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In a Q meter, an inductor tunes to 2 MHz with 450 pF and to 4 MHz with 90 pF. The value of self-distributed capacitance is:

Options :

1. ✖ 20 pF

2. ✔ 30 pF

3. ✖ 40 pF

4. ✖ 50 pF

Question Number : 110 Question Id : 231098710 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A DC voltmeter of 50 V range uses a 200 μ A meter movement with an internal resistance of 100 Ω . The value of the multiplier resistance is:

Options :

1. ✖ 224.9 k Ω

2. ✔ 249.9 k Ω

3. ✖ 200.9 k Ω

4. ✖ 159.9 k Ω

Question Number : 111 Question Id : 231098711 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

With regard to the moving coil PMMC instruments, which of the following is an incorrect statement?

1. ✖ It has low power consumption
2. ✖ It has no hysteresis loss
3. ✖ It has high torque-to-weight ratio
4. ✔ It has low sensitivity

Question Number : 112 Question Id : 231098712 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For a dynamometer-type instrument, the incorrect statement from the following is:

Options :

1. ✖ It is free of hysteresis error
2. ✖ It is free of eddy current error
3. ✔ It has high torque-to-weight ratio
4. ✖ It has low sensitivity

Question Number : 113 Question Id : 231098713 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A moving-coil ammeter is wound with 40 turns and gives full-scale deflection with 5 A. How many turns would be required on the same bobbin to give full scale deflection with 20 A?

Options :

1. ✖ 2.5
2. ✔ 10

3. ✖ 40

4. ✖ 160

Question Number : 114 Question Id : 231098714 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A voltmeter having a sensitivity of $1000 \Omega/V$ reads 100 V on its 150 V scale when connected in a circuit. The resistance of voltmeter is:

Options :

1. ✖ 100 k Ω

2. ✔ 150 k Ω

3. ✖ 50 k Ω

4. ✖ 250 k Ω

Question Number : 115 Question Id : 231098715 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is NOT a characteristics of an ideal transducer?

Options :

1. ✖ High sensitivity

2. ✖ High dynamic range

3. ✔ Low linearity

4. ✖ Low noise

Question Number : 116 Question Id : 231098716 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Which of the following does NOT belong to passive transducer?

Options :

1. ✖ Thermistor
2. ✔ Thermocouple
3. ✖ Strain gauge
4. ✖ LVDT

Question Number : 117 Question Id : 231098717 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the below is NOT used in a photo-conductive cell?

Options :

1. ✖ Selenium
2. ✔ Quartz
3. ✖ Silicon
4. ✖ Cadmium sulphide

Question Number : 118 Question Id : 231098718 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is NOT used in piezo-electric transducer?

Options :

1. ✖ lead titanate
2. ✖ rochelle salt

3. ✖ barium titanate

4. ✔ selenium

Question Number : 119 Question Id : 231098719 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which device can be used for measuring torque?

Options :

1. ✖ Helical spring

2. ✔ Flat spiral spring

3. ✖ Bellow

4. ✖ Diaphragm

Question Number : 120 Question Id : 231098720 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is used for measuring torque in rotating parts in machines?

Options :

1. ✖ Accelerometer

2. ✔ Dynamometer

3. ✖ Tachometer

4. ✖ Rotatometer

Question Number : 121 Question Id : 231098721 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Options :

1. ✖ Venturi meter

2. ✖ pH meter

3. ✔ Pilot-Static tubes

4. ✖ Viscometer

Question Number : 122 Question Id : 231098722 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following can be measured using change in resistivity?

Options :

1. ✖ Temperature

2. ✖ Visible radiation

3. ✖ Moisture content

4. ✔ All of the mentioned

Question Number : 123 Question Id : 231098723 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following represents Newton's equation for viscosity?

Options :

1. ✔ $\tau = \mu (dv/dt)$ 2. ✖ $\mu = \tau (dv/dt)$

4. ✖ $\tau = \mu^2 (dv/dt)$

Question Number : 124 Question Id : 231098724 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

Name the sensor used for measuring very high temperature to which physical contact is impractical?

Options :

1. ✖ Thermocouple

2. ✖ Thermistor

3. ✔ Pyrometer

4. ✖ RTD

Question Number : 125 Question Id : 231098725 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

What happens to the viscosity of liquid and gas when the temperature is increased?

Options :

1. ✖ Both increase

2. ✖ Both decrease

3. ✖ For liquid both increase and for gas both decrease

4. ✔ for liquid both decrease and for gas both increase

Question Number : 126 Question Id : 231098726 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

Options :

1. ✖ inversely
2. ✔ directly
3. ✖ logarithmically
4. ✖ exponentially

Question Number : 127 Question Id : 231098727 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one is not a type of Viscometer?

Options :

1. ✖ Orifice viscometer
2. ✖ Capillary viscometers
3. ✖ Redwood viscometer
4. ✔ Rotameter viscometer

Question Number : 128 Question Id : 231098728 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In which of the following ways can zero drift be reduced in the pH meter?

Options :

1. ✖ Using filter
2. ✖ Giving zero adjustment arrangement

4. ✔ Using balanced and differential amplifiers

Question Number : 129 Question Id : 231098729 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In the ultrasonic-level gauge, the ultrasonic source is placed at the:

Options :

1. ✔ bottom of the vessel containing the liquid

2. ✖ top of the vessel containing the liquid

3. ✖ middle of the vessel containing the liquid

4. ✖ far end from the vessel containing the liquid

Question Number : 130 Question Id : 231098730 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Synthetic piezo-electric material is:

Options :

1. ✖ Quartz

2. ✔ Lithium Sulphate

3. ✖ Sodium Potassium Tartrate

4. ✖ Rochelle Salt

Question Number : 131 Question Id : 231098731 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Options :

1. ✖ Seebeck Effect
2. ✖ Thomson Effect
3. ✔ Stroboscopic Effect
4. ✖ Peltier Effect

Question Number : 132 Question Id : 231098732 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A 200-watt carrier is amplitude-modulated to a depth of 50 percent. What is the total power in the modulated wave?

Options :

1. ✖ 175 W
2. ✔ 225 W
3. ✖ 250 W
4. ✖ 200 W

Question Number : 133 Question Id : 231098733 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

During modulation, the information signal and the high frequency signal, respectively, are called:

Options :

1. ✖ carrier signal and modulating signal
2. ✔ modulating signal and carrier signal

Question Number : 134 Question Id : 231098734 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The aperture effect in flat top pulses are reduced by using:

Options :

1. ✖ Predictor

2. ✖ Integrator

3. ✔ Equalizer

4. ✖ Compander

Question Number : 135 Question Id : 231098735 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Minimum Bandwidth required for Minimum Shift Keying (MSK)? Where f_b is maximum frequency of baseband signal.

Options :

1. ✖ $BW = f_b$

2. ✔ $BW = 1.5f_b$

3. ✖ $BW = 2f_b$

4. ✖ $BW = 2.5f_b$

Question Number : 136 Question Id : 231098736 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

www.prepp.in The bit rate of a digital communication system is 16Mbps. The modulation scheme is QPSK. The baud rate of the system is

Options :

1. ✖ 16Mbps
2. ✔ 32Mbps
3. ✖ 48Mbps
4. ✖ 64Mbps

Question Number : 137 Question Id : 231098737 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

For optical detection, the photo diode works in:

Options :

1. ✖ forward bias
2. ✔ reverse bias
3. ✖ both forward and reverse bias
4. ✖ forward conduction bias

Question Number : 138 Question Id : 231098738 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.66

In amplitude modulation, P_t is transmitted AM power and P_c is unmodulated carrier power. Then for maximum average power transmission:

Options :

1. ✖ $P_t = P_c$

3. ✗ $P_t = P_c/4$

4. ✗ $P_t = P_c/2$

Question Number : 139 Question Id : 231098739 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For an AM wave represented by $10[1 + 0.6 \cos(2000\pi t)] \cos(2\pi * 10^6 t)$, the bandwidth of modulated signal is:

Options :

1. ✗ 3 KHz

2. ✓ 2 KHz

3. ✗ 5 KHz

4. ✗ 4 KHz

Question Number : 140 Question Id : 231098740 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The drawback of digital modulation over analog modulation is:

Options :

1. ✗ low noise immunity

2. ✓ high bandwidth requirement

3. ✗ low bit rate

4. ✗ multiplexing

Question Number : 141 Question Id : 231098741 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Four voice channels, each having a bandwidth of 4 KHz, are to be multiplexed using FDM. A guard-band of 500 Hz is to be inserted between the adjacent channels. The minimum bandwidth of FDM signal is:

Options :

1. ✖ 16 KHz

2. ✔ 17.5 KHz

3. ✖ 18 KHz

4. ✖ 31 KHz

Question Number : 142 Question Id : 231098742 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The Euclidean distance for BPSK is (where E_b is the signal energy):

Options :

1. ✖ $d = \sqrt{E_b}$

2. ✖ $d = \sqrt{2E_b}$

3. ✔ $d = 2\sqrt{E_b}$

4. ✖ $d = 4\sqrt{E_b}$

Question Number : 143 Question Id : 231098743 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The cladding that surrounds the fibre core:

Options :

1. ✖ is used to protect the fibre
2. ✖ is used to reduce optical interference
3. ✔ helps to guide the light in the core
4. ✖ ensures that refractive index remains unaltered

Question Number : 144 Question Id : 231098744 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A carrier is phase modulated with frequency deviation of 10kHz by a single tone frequency of 1kHz. If the single tone frequency is increased to 2kHz and assuming that phase deviation remains unchanged, the Bandwidth of the PM signal is:

Options :

1. ✖ 21 kHz
2. ✖ 22 kHz
3. ✔ 42 kHz
4. ✖ 44 kHz

Question Number : 145 Question Id : 231098745 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

An Amplitude modulated amplifier has a radio frequency output of 18w at 100% modulation. The internal loss in the modulator is 6w. What is the unmodulated carrier power?

Options :

1. ✖ 12 w
2. ✖ 14 w

3. ✓ 16 w

4. ✗ 18 w

Question Number : 146 Question Id : 231098746 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

An FM wave is represented by $y(t) = 10 \sin[2000\pi t + 4 \sin 1250\pi t]$. The maximum frequency deviation is:

Options :

1. ✗ 1250 Hz

2. ✗ 2000 Hz

3. ✓ 2500 Hz

4. ✗ 4000 Hz

Question Number : 147 Question Id : 231098747 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Six message signals, each of bandwidth 5 KHz, are time-division-multiplexed and transmitted. The signaling rate and minimum channel bandwidth to avoid cross-talk in TDM, respectively, are:

Options :

1. ✗ 30 Kbps, 15 KHz

2. ✓ 60 Kbps, 30 KHz

3. ✗ 60 Kbps, 15 KHz

4. ✗ 30 Kbps, 30 KHz

Question Number : 148 Question Id : 231098748 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

The main consideration in the choice of optical detector should be responsivity. The term responsivity is defined as the ratio of?

Options :

1. ✓ Diode's output current to the input optical power
2. ✗ Diode's output voltage to the input optical power
3. ✗ Input optical power to the diode's output current
4. ✗ Input optical power to the diode's output voltage

Question Number : 149 Question Id : 231098749 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is NOT the reason as to why TRF receiver was removed by the super heterodyne receiver?

Options :

1. ✗ Gain variation over frequency coverage range
2. ✓ Insufficient gain and sensitivity
3. ✗ Inadequate selectivity at high frequencies
4. ✗ Instability

Question Number : 150 Question Id : 231098750 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Identify the false statement for interferometric method:

Options :

1. ✗ It is used to determine the refractive index profile of optical fiber.

2. ✓ It does not require Interference fringe pattern to measure refractive index.

3. ✗ It is used for surface topography measurement.

4. ✗ Instruments do not physically contact the surface under test.