

Notations :

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

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Actual Answer Key:	Yes
Calculator:	None
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
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Electronics and Instrumentation Engineering

Group Number :	1
Group Id :	89465815
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Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0
Group Marks:	200

Mathematics

Section Id :	89465856
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	50
Number of Questions to be attempted:	50
Section Marks:	50
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 1 Question Id : 8946582805 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Let $M = (a_{ij})$ be a 10×10 matrix such that $a_{ij} = \begin{cases} 1, & \text{if } i+j=11 \\ 0, & \text{otherwise} \end{cases}$. Then, the determinant of M is _____.

Options :

- 1. ✗ 0
- 2. ✗ 1
- 3. ✓ -1
- 4. ✗ 11

Question Number : 2 Question Id : 8946582806 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Let A and B be two square matrices of order n . If $AB = A$, $BA = B$ then $A^2 + B^2 = \underline{\hspace{2cm}}$.

Options :

- 1. ✗ AB
- 2. ✗ $A - B$
- 3. ✗ 0
- 4. ✓ $A + B$

Question Number : 3 Question Id : 8946582807 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Consider the system of linear equations $x + y + z = 3$, $x - y - z = 4$, $x - 5y + \alpha z = 6$. Then, the value of α for which this system has an infinite number of solutions is _____.

Options :

1. ✓ -5

2. ✗ 5

3. ✗ 3

4. ✗ 1

Question Number : 4 Question Id : 8946582808 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $A(\alpha, \beta) = \begin{pmatrix} \cos \alpha & \sin \alpha & 0 \\ -\sin \alpha & \cos \alpha & 0 \\ 0 & 0 & e^\beta \end{pmatrix}$, then the inverse of the matrix $A(\alpha, \beta)$ is _____.

Options :

1. ✗ $A(\alpha, \beta)$

2. ✗ $A(\alpha, -\beta)$

3. ✓ $A(-\alpha, -\beta)$

4. ✗ $A(-\alpha, \beta)$

Question Number : 5 Question Id : 8946582809 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The rational fraction $\frac{x^2 + 1}{(x^2 + 4)(x - 2)}$ is equal to _____

Options :

1. ✗ $\frac{3x + 6}{8(x^2 + 4)} + \frac{5}{4(x - 2)}$

2. ✗ $\frac{3x + 6}{4(x^2 + 4)} + \frac{5}{8(x - 2)}$

3. ✓

$$\frac{3x+6}{8(x^2+4)} + \frac{5}{8(x-2)}$$

4. ✗

$$\frac{3x+6}{(x^2+4)} + \frac{5}{(x-2)}$$

Question Number : 6 Question Id : 8946582810 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\log_2 3 = a, \log_3 5 = b, \log_7 2 = c$, then $\log_{140} 63 =$ _____.

Options :

1. ✗

$$\frac{1-2ac}{2c+abc+1}$$

2. ✗

$$\frac{1-2ac}{2c-abc-1}$$

3. ✗

$$\frac{1+2ac}{2c-abc-1}$$

4. ✓

$$\frac{1+2ac}{2c+abc+1}$$

Question Number : 7 Question Id : 8946582811 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\cos \frac{2\pi}{7} + \cos \frac{4\pi}{7} + \cos \frac{6\pi}{7} = \text{_____}.$$

Options :

1. ✗

$$1$$

2. ✗

$$\frac{1}{2}$$

3. ✓

$$\frac{-1}{2}$$

4. ✖ 0

Question Number : 8 Question Id : 8946582812 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the angles A, B and C of a triangle are in an arithmetic progression and if a, b and c denote the lengths of the sides opposite to A, B and C respectively, then the value of the expression $\frac{a}{c} \sin 2C + \frac{c}{a} \sin 2A$ is ____.

Options :

1. ✔ $\sqrt{3}$

2. ✖ $\frac{\sqrt{3}}{2}$

3. ✖ 1

4. ✖ $\frac{1}{2}$

Question Number : 9 Question Id : 8946582813 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\sin x + \sin y = \frac{1}{4}$ and $\cos x + \cos y = \frac{1}{3}$, then $\cot(x + y) =$ _____.

Options :

1. ✔ $\frac{7}{24}$

2. ✖ $\frac{24}{7}$

3. ✖ $\frac{3}{4}$

4. ✖ 1

Question Number : 10 Question Id : 8946582814 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\sin(x^\circ + 28^\circ) = \cos(3x^\circ - 78^\circ)$ and $0^\circ < x^\circ < 90^\circ$, then, which of the following is the value of x° ?

Options :

1. ✖ 50°

2. ✖ 30°

3. ✖ 16°

4. ✔ 8°

Question Number : 11 Question Id : 8946582815 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $x = \tan\left(\operatorname{Cosec}^{-1}\frac{65}{63}\right)$ and $y = \sec^2\left(\operatorname{Cot}^{-1}\frac{1}{2}\right) + \operatorname{cosec}^2\left(\operatorname{Tan}^{-1}\frac{1}{3}\right)$, then $(x, y) = \underline{\hspace{2cm}}$.

Options :

1. ✔ $\left(\frac{63}{16}, 15\right)$

2. ✖ $\left(\frac{16}{63}, 15\right)$

3. ✖ $\left(\frac{63}{16}, 5\right)$

4. ✖ $\left(\frac{16}{63}, 5\right)$

Question Number : 12 Question Id : 8946582816 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The equation $\tan^{-1}\left(\frac{x+1}{x-1}\right) + \tan^{-1}\left(\frac{x-1}{x}\right) = \tan^{-1}(-7)$ has _____.

Options :

1. ☒ unique solution $x = 2$
2. ☐ two solutions $x = 1, 2$
3. ☐ no solution
4. ☐ infinite number of solutions

Question Number : 13 Question Id : 8946582817 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a triangle ABC , let a, b and c denote the lengths of the sides opposite to A, B and C respectively. If $\frac{1}{a+c} + \frac{1}{b+c} = \frac{3}{a+b+c}$, then the angle C is _____.

Options :

1. ☐ 30°
2. ☐ 90°
3. ☒ 60°
4. ☐ 45°

Question Number : 14 Question Id : 8946582818 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\sin^{-1}x = 3$ then $x =$ _____.

Options :

1. ☒ $\log(3 + \sqrt{10})$
2. ☐ $\log(3 - \sqrt{10})$

3. ✖ $\log(6 + \sqrt{10})$

4. ✖ 1

Question Number : 15 Question Id : 8946582819 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT true for the complex numbers z_1 and z_2 ?

Options :

1. ✖ $\frac{z_1}{z_2} = \frac{z_1 \bar{z}_2}{|z_2|^2}$

2. ✖ $|z_1 + z_2| \leq |z_1| + |z_2|$

3. ✔ $|z_1 + z_2| \leq ||z_1| - |z_2||$

4. ✖ $|z_1 + z_2|^2 + |z_1 - z_2|^2 = 2|z_1|^2 + 2|z_2|^2$

Question Number : 16 Question Id : 8946582820 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a complex number $z = \frac{\sqrt{3}}{2} + i\frac{1}{2}$, then z^4 is _____.

Options :

1. ✖ $2\sqrt{2} + 2i$

2. ✔ $\frac{-1}{2} + i\frac{\sqrt{3}}{2}$

3. ✖ $\frac{\sqrt{3}}{2} - i\frac{1}{2}$

4. ✖ $\frac{\sqrt{3}}{8} - i\frac{1}{8}$

Question Number : 17 Question Id : 8946582821 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The equation of the straight line which makes intercepts r and s on the coordinate axes

such that $r + s = 5$ and $rs = 6$ is $ax + by + c = 0$, then $a + b + c = \underline{\hspace{1cm}}$.

Options :

1. ✖ 11

2. ✖ 5

3. ✖ -7

4. ✔ -1

Question Number : 18 Question Id : 8946582822 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a straight line $ax + by + \sqrt{5} = 0$ touches the circle $x^2 + y^2 = 5$, then which of the following is TRUE?

Options :

1. ✖ $5(a^2 + b^2) = 1$

2. ✖ $a^2 + b^2 = \sqrt{5}$

3. ✔ $a^2 + b^2 = 1$

4. ✖ $\sqrt{a^2 + b^2} = 5$

Question Number : 19 Question Id : 8946582823 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a chord of length 12 cm is at a distance of $4\sqrt{10}$ cm from the centre of the circle, then the radius of the circle is $\underline{\hspace{1cm}}$.

Options :

1. ✓ 14 cm

2. ✗ $\sqrt{304}$ cm

3. ✗ 4 cm

4. ✗ $\sqrt{124}$ cm

Question Number : 20 Question Id : 8946582824 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The 2019th derivative of the function $(x-1)e^{-x}$ is _____

Options :

1. ✗ $\frac{x-2019}{e^x}$

2. ✗ $\frac{2019-x}{e^x}$

3. ✗ $\frac{x-2020}{e^x}$

4. ✓ $\frac{2020-x}{e^x}$

Question Number : 21 Question Id : 8946582825 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $z = f(x+ct) + \phi(x-ct)$, then $\frac{\partial^2 z}{\partial t^2} =$ _____.

Options :

1. ✓ $c^2 \frac{\partial^2 z}{\partial x^2}$

2. ✖ $-c^2 \frac{\partial^2 z}{\partial x^2}$

3. ✖ $\frac{1}{c^2} \frac{\partial^2 z}{\partial x^2}$

4. ✖ $-\frac{1}{c^2} \frac{\partial^2 z}{\partial x^2}$

Question Number : 22 Question Id : 8946582826 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If $x = r \cos \theta$, $y = r \sin \theta$ and $U = \frac{f(\theta)}{r}$ then $x \frac{\partial U}{\partial x} + y \frac{\partial U}{\partial y} =$ _____.

Options :

1. ✖ 0

2. ✖ U

3. ✔ $-U$

4. ✖ $2U$

Question Number : 23 Question Id : 8946582827 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Let $f(x+y) = f(x)f(y)$, $\forall x, y$ and $f'(0) = 5$, $f(2019) = 15$. Then the value of $f'(2019)$ is _____.

Options :

1. ✖ 3

2. ✔ 75

3. ✖ $\frac{1}{3}$

4. ✖ $\frac{1}{75}$

Question Number : 24 Question Id : 8946582828 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The set of values of x for which the function $f(x) = 2x^3 - 9x^2 + 12x + 4$ is increasing is _____.

Options :

1. ✖ $1 < x < 2$

2. ✖ all $x \in \mathbb{R}$

3. ✔ $\mathbb{R} - [1, 2]$

4. ✖ $x \geq 2$

Question Number : 25 Question Id : 8946582829 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\lim_{x \rightarrow \infty} x \left(\log \left(1 + \frac{x}{2} \right) - \log \left(\frac{x}{2} \right) \right) = \underline{\hspace{2cm}}.$$

Options :

1. ✖ e^2

2. ✖ ∞

3. ✖ 1

4. ✔ 2

Question Number : 26 Question Id : 8946582830 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $f(x, y, z) = x^3 + xz^2 + y^3 + xyz$, $x = e^t$, $y = \cos t$, $z = t^3$ then $\frac{df}{dt}$ at $t = 0$ is _____.

Options : <https://previouspaper.in>

1. ✖ 2

2. ✖ 4

3. ✖ e

4. ✔ 3

Question Number : 27 Question Id : 8946582831 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is the value of $5050 \times \frac{\int_0^1 (1 - (1-x)^{50})^{100} x^{49} dx}{\int_0^1 (1-x^{50})^{101} x^{49} dx}$?

Options :

1. ✔ 5100

2. ✖ 1

3. ✖ 5050

4. ✖ $\frac{1}{2}$

Question Number : 28 Question Id : 8946582832 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\int_0^1 \max \left\{ x, \frac{1}{2} - x \right\} dx = \underline{\hspace{2cm}}$.

Options :

1. ✖ 0

2. ✖ $\frac{1}{2}$

3. ✔ $\frac{9}{16}$

4. ✖ $\frac{9}{8}$

Question Number : 29 Question Id : 8946582833 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\lim_{n \rightarrow \infty} \frac{1}{n^6} \sum_{k=1}^n k^5 = \underline{\hspace{2cm}}.$$

Options :

1. ✔ $\frac{1}{6}$

2. ✖ $\frac{1}{5}$

3. ✖ 1

4. ✖ 6

Question Number : 30 Question Id : 8946582834 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\int_{-1}^1 \frac{x^{15}(1-x^2)^{12}}{(1+x^2)^8} dx = \underline{\hspace{2cm}}.$$

Options :

1. ✖ 0

2. ✔ $\frac{22}{7} - \pi$

3. ✖ $\frac{2}{105}$

4. ✖ $\frac{71}{15} - \frac{3\pi}{4}$

Question Number : 31 Question Id : 8946582835 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The area of the region bounded by the curves $y = 2 - x^2$ and $y = -x$ is _____.

Options :

1. ✖ 1

2. ✖ $\frac{8}{19}$

3. ✖ $\frac{35}{4}$

4. ✔ $\frac{27}{6}$

Question Number : 32 Question Id : 8946582836 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The volume of the solid obtained by revolving the region bounded by the curves $y = x^3$, $y = 8$ and $x = 0$ about the y -axis is _____.

Options :

1. ✖ $\frac{96}{5}$

2. ✔ $\frac{96\pi}{5}$

3. ✖ $\frac{32\pi}{5}$

4. ✖ $\frac{32}{5}$

Question Number : 33 Question Id : 8946582837 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The value of $\int_0^{\pi} \theta \sin^2 \theta \cos^4 \theta d\theta$ is _____.

Options :

1. ✔ $\frac{\pi^2}{32}$

2. ✖ $\frac{\pi}{32}$

3. ✖ $\frac{\pi^2}{16}$

4. ✖ $\frac{\pi}{16}$

Question Number : 34 Question Id : 8946582838 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The average value of the function $f(x) = 4 - x^2$ over the interval $[-1, 3]$ is _____.

Options :

1. ✖ 5

2. ✖ $\frac{20}{3}$

3. ✔ $\frac{5}{3}$

4. ✖ 1

Question Number : 35 Question Id : 8946582839 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The differential equation $x \frac{dy}{dx} = y + x^2$, $x > 0$ satisfying $y(0) = 0$ has _____.

Options :

1. ✔ infinitely many solutions

2. ✖ no solution

3. ✖ a unique solution

4. ✖ exactly two solutions

Correct Marks : 1 Wrong Marks : 0

The differential equation $(axy^3 + y \cos x)dx + (x^2y^2 + b \sin x)dy = 0$ is an exact differential equation for _____.

Options :

1. ✖ $a = 1, b = \frac{3}{2}$

2. ✖ $a = \frac{3}{2}, b = 1$

3. ✔ $a = \frac{2}{3}, b = 1$

4. ✖ $a = 1, b = \frac{2}{3}$

Question Number : 37 Question Id : 8946582841 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\sin x$ is a solution of the differential equation $\frac{d^4y}{dx^4} + 2\frac{d^3y}{dx^3} + 6\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + 5y = 0$, then the general solution is _____.

Options :

1. ✔ $y = c_1 \sin x + c_2 \cos x + e^{-x}(c_3 \sin 2x + c_4 \cos 2x)$

2. ✖ $y = c_1 \sin x + c_2 \cos x + c_3 \sin 2x + c_4 \cos 2x$

3. ✖ $y = c_1 \sin x + c_2 \cos x + c_3 e^{-3x} + c_4 e^{-2x}$

4. ✖ $y = c_1 \sin x + c_2 \cos x + c_3 e^{3x} + c_4 e^{2x}$

Question Number : 38 Question Id : 8946582842 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $D \equiv \frac{d}{dx}$, then $\frac{1}{D^2 - 4D + 13}(6e^{2x} \sin 3x)$ is _____.

Options :

1. ✓ $-xe^{2x} \cos 3x$

2. ✗ $xe^{2x} \cos 3x$

3. ✗ $-xe^{2x} \sin 3x$

4. ✗ $xe^{2x} \sin 3x$

Question Number : 39 Question Id : 8946582843 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The general solution of $\left(\frac{e^{-2\sqrt{x}}}{\sqrt{x}} - \frac{y}{\sqrt{x}} \right) \frac{dx}{dy} = 1$ is _____.

Options :

1. ✗ $y = e^{2\sqrt{x}} (2\sqrt{x} + c)$

2. ✗ $y = 2\sqrt{x} e^{2\sqrt{x}} + c$

3. ✗ $y = 2\sqrt{x} e^{-2\sqrt{x}} + c$

4. ✓ $y = e^{-2\sqrt{x}} (2\sqrt{x} + c)$

Question Number : 40 Question Id : 8946582844 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Let y be the solution of the differential equation $\frac{dy}{dx} + y = x$, $x \in \mathbb{R}$ and $y(-1) = 0$.

Then, $y(1)$ is equal to _____.

Options :

1. ✖ $\frac{2}{e} - \frac{2}{e^2}$

2. ✔ $2e^{-2}$

3. ✖ $2 - \frac{2}{e}$

4. ✖ $2 - 2e$

Question Number : 41 Question Id : 8946582845 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If the substitution $x = X + h$, $y = Y + k$ transforms the differential equation $(y - x + 1)dy - (y + x + 2)dx = 0$ into a homogeneous equation, then the value of (h, k) is _____.

Options :

1. ✖ $\left(\frac{1}{2}, \frac{3}{2}\right)$

2. ✔ $\left(\frac{-1}{2}, \frac{-3}{2}\right)$

3. ✖ $\left(\frac{3}{2}, \frac{1}{2}\right)$

4. ✖ $\left(\frac{-3}{2}, \frac{-1}{2}\right)$

Question Number : 42 Question Id : 8946582846 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The general solution of $\frac{dy}{dx} - y = y^2(\sin x + \cos x)$ is _____.

Options :

1. ✖ $y = \frac{1}{ce^x - \sin x}$

2. ✖ $y = ce^{-x} - e^x \sin x$

3. ✖ $y = ce^{-x} - \sin x$

4. ✔ $y = \frac{1}{ce^{-x} - \sin x}$

Question Number : 43 Question Id : 8946582847 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The Laplace transform of the function $f(t) = \begin{cases} \sin t, & \text{for } 0 \leq t \leq \pi \\ 0, & \text{for } t > \pi \end{cases}$

is _____.

Options :

1. ✖ $\frac{1}{(1+s^2)}$ for all $s > 0$

2. ✖ $\frac{1}{(1+s^2)}$ for all $s < \pi$

3. ✔ $\frac{(1+e^{-\pi s})}{(1+s^2)}$ for all $s > 0$

4. ✖ $\frac{e^{-\pi s}}{(1+s^2)}$ for all $s > 0$

Question Number : 44 Question Id : 8946582848 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The inverse Laplace transform of $\frac{5}{s} - \frac{3e^{-3s}}{s} - \frac{2e^{-7s}}{s}$ is _____.

Options : <https://previouspaper.in>

1. ✖

$$f(x) = \begin{cases} 5, & 0 < x < 3 \\ 0, & 3 < x < 7 \\ 2, & x > 7 \end{cases}$$

2. ✖

$$f(x) = \begin{cases} 5, & 0 < x < 7 \\ 2, & x > 7 \end{cases}$$

3. ✔

$$f(x) = \begin{cases} 5, & 0 < x < 3 \\ 2, & 3 < x < 7 \\ 0, & x > 7 \end{cases}$$

4. ✖

$$f(x) = \begin{cases} 5, & 0 < x < 7 \\ 0, & x > 7 \end{cases}$$

Question Number : 45 Question Id : 8946582849 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The Laplace transform of a function $f(x)$ is $F(s) = \frac{1}{s^3 + 2s^2 + 2s}$ Then, $\lim_{x \rightarrow 0} f(x) =$

_____.

Options :

1. ✔ 0

2. ✖ 3

3. ✖ ∞

4. ✖ $\frac{1}{2}$

Question Number : 46 Question Id : 8946582850 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The Laplace transform of the solution of the differential equation $\frac{dy}{dx} - 2y = e^{5x}$ with the initial condition $y(0) = 3$ is _____.

Options :

1. ✖ $\frac{1}{3(s-2)} + \frac{1}{3(s-5)}$

2. ✖ $\frac{8}{3(s-2)} + \frac{1}{s-5}$

3. ✔ $\frac{8}{3(s-2)} + \frac{1}{3(s-5)}$

4. ✖ $\frac{8}{s-2} + \frac{1}{3(s-5)}$

Question Number : 47 Question Id : 8946582851 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If $L(y(x)) = Y(s)$ and $y(x) = x^3 + \int_0^x \sin(x-t)y(t)dt$ then $\frac{1}{6}Y(s) =$ _____.

Options :

1. ✔ $\left(\frac{1}{s^4} + \frac{1}{s^6}\right)$

2. ✖ $\left(\frac{1}{s^3} + \frac{1}{s^5}\right)$

3. ✖ $\left(\frac{1}{s^3} + \frac{1}{s^7}\right)$

4. ✖ $\left(\frac{1}{s} + \frac{1}{s^3}\right)$

Question Number : 48 Question Id : 8946582852 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

For $x > 0$, $\int_0^{\infty} \frac{\sin xt}{t} dt$ is _____.

Options :

1. ✖ 0

2. ✖ $\frac{\pi}{2x}$

3. ✖ $\frac{1}{x}$

4. ✔ $\frac{\pi}{2}$

Question Number : 49 Question Id : 8946582853 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $f(x) = \frac{1}{2}a_0 + \sum_{n=1}^{\infty} (a_n \cos nx + b_n \sin nx)$ is the Fourier series of the function

$$f(x) = \begin{cases} 0, & -\pi \leq x < 0 \\ \pi, & 0 \leq x \leq \pi \end{cases} \text{ then, which of the following is TRUE?}$$

Options :

1. ✖ $a_n = 0$, for all $n \geq 0$

2. ✖ $a_0 = \frac{\pi}{2}$ and $a_n = 0$, for all $n \geq 1$

3. ✖ $b_n \neq 0$, for all $n \geq 1$

4. ✔ $a_0 = \pi$ and $a_n = 0$, for all $n \geq 1$

Question Number : 50 Question Id : 8946582854 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A function $f(x)$ is such that $f(x + 2\pi) = f(x)$ and $f(x) = x$, $-\pi \leq x \leq \pi$. The Fourier series of $f(x)$ is _____.

Options :

1. ✓

$$2\left(\sin x - \frac{1}{2}\sin 2x + \frac{1}{3}\sin 3x - \dots\right)$$

2. ✗

$$2\left(\sin x + \frac{1}{2}\sin 2x + \frac{1}{3}\sin 3x + \dots\right)$$

3. ✗

$$2\left(\cos x - \frac{1}{2}\cos 2x + \frac{1}{3}\cos 3x - \dots\right)$$

4. ✗

$$2\left(\cos x + \frac{1}{2}\cos 2x + \frac{1}{3}\cos 3x + \dots\right)$$

Section Id :

Section Number :

Section type :

Mandatory or Optional:

Number of Questions:

Number of Questions to be attempted:

Section Marks:

Display Number Panel:

Group All Questions:

Physics

89465857

2

Online

Mandatory

25

25

25

Yes

No

Sub-Section Number:

1

Sub-Section Id:

89465862

Question Shuffling Allowed :

Yes

Question Number : 51 Question Id : 8946582855 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The dimensional formula for gravitational constant is _____.

Options :

1. ✓ $L^3T^{-2}M^{-1}$

2. ✗ $L^3T^2M^{-1}$

3. ✗ $L^2T^3M^{-2}$

4. ✗ $L^3T^1M^{-3}$

Correct Marks : 1 Wrong Marks : 0

The dimensions of the quantities in one of the following pairs are same. Identify the pairs.

Options :

1. ✓ torque and work
2. ✗ angular momentum and work
3. ✗ energy and Young's modules
4. ✓ light year and wavelength

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

Correct Marks : 1 Wrong Marks : 0

Which of the following is not correct?

Options :

1. ✗ $\mathbf{j} \times \mathbf{i} = -\mathbf{k}$
2. ✗ $\mathbf{k} \times \mathbf{j} = -\mathbf{i}$
3. ✗ $\mathbf{i} \times \mathbf{k} = -\mathbf{j}$
4. ✓ $\mathbf{k} \times \mathbf{i} = -\mathbf{j}$

Correct Marks : 1 Wrong Marks : 0

If $0.5\mathbf{i} + 0.8\mathbf{j} + c\mathbf{k}$ is a unit vector then c is _____.

Options :

1. ✗ $\sqrt{0.89}$
2. ✗ 0.2
3. ✗ 0.3

4. ☒ $\sqrt{0.11}$

Question Number : 55 Question Id : 8946582859 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following is correct?

Options :

1. ☐ $A.B \neq B.A$

2. ☒ $A.(B+C) = A.B + C.A$

3. ☐ $A.B = A.B - A.C$

4. ☐ $A.B = -B.A$

Question Number : 56 Question Id : 8946582860 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The acceleration due to gravity on the surface of the earth is given by_____

Options :

1. ☐ G

2. ☒ GM/R^2

3. ☐ GM/R

4. ☐ GM

Question Number : 57 Question Id : 8946582861 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The value of g is maximum at_____.

Options :

1. ☐ equator

2. ☒ Pole

3. ✖ higher altitudes
4. ✖ at the centre of the earth

Question Number : 58 Question Id : 8946582862 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

When the speed of rotation of earth increases your weight _____

Options :

1. ✖ increases
2. ✔ decreases
3. ✖ remains constant
4. ✖ becomes zero

Question Number : 59 Question Id : 8946582863 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The value of G is zero at _____

Options :

1. ✔ nowhere
2. ✖ the centre of the earth
3. ✖ surface of the earth
4. ✖ pole

Question Number : 60 Question Id : 8946582864 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If the linear momentum is increased by 50%, the kinetic energy will be increased
by _____

Options :

1. ✖ 50%

2. ✖ 100%

3. ✔ 125%

4. ✖ 25%

Question Number : 61 Question Id : 8946582865 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A metallic block slides down a smooth inclined plane when released from the top, while the other falls freely from the same point, then _____

Options :

1. ✔ both will reach the ground with the same velocity

2. ✖ both will reach the ground together

3. ✖ both will reach the ground travelling with same acceleration

4. ✖ the block sliding down the plane will strike earlier

Question Number : 62 Question Id : 8946582866 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A long spring is stretched by 2 cm and its potential energy is u . If the spring is stretched by 10 cm, then the potential energy stored in it will be _____.

Options :

1. ✖ $u/24$

2. ✖ $u/5$

3. ✖ $5u$

4. ✔ $25u$

Correct Marks : 1 Wrong Marks : 0

Two masses of 1 gm and 4 gm are moving with equal kinetic energies. The ratio of the magnitudes of their linear momentum is _____

Options :

1. ✖ 4:1
2. ✖ $\sqrt{2}:1$
3. ✔ 1:2
4. ✖ 1:16

Question Number : 64 Question Id : 8946582868 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A body is dropped from rest at height 0.5 m. What will be its velocity when it just strikes the ground?

Options :

1. ✖ 7 m/s
2. ✖ 9.8 m/s
3. ✖ 4.9 m/s
4. ✔ $\sqrt{9.8}$ m/s

Question Number : 65 Question Id : 8946582869 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A particle moves such that its acceleration a is given by $a = -bx$ where x is the displacement from equilibrium and b is a constant. The period of Oscillation is _____.

Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.

Options :

1. $2\pi b$

2. $2\pi\sqrt{b}$
3. $2\pi/b$
4. $2\sqrt{\pi}/b$

Question Number : 66 Question Id : 8946582870 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A particle is vibrating in simple harmonic motion with amplitude of 4 cm. At what displacement from the equilibrium position is its energy half potential and half kinetic?

Options :

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

Question Number : 67 Question Id : 8946582871 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When a star approaches the earth, the waves are shifted towards _____

Options :

1. ✖ green colour
2. ✖ yellow colour
3. ✔ blue end
4. ✖ red end

Question Number : 68 Question Id : 8946582872 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a tuning fork of frequency 90 is sounded and moved towards an observer with a velocity equal to one tenth the velocity of sound, then the note heard by the observer will have frequency_____.

Options :

1. ✓ 100
2. ✗ 90
3. ✗ 80
4. ✗ 900

Question Number : 69 Question Id : 8946582873 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the most important factor which helps to recognise a person by his/her voice alone_____

Options :

1. ✓ quality
2. ✗ pitch
3. ✗ intensity
4. ✗ quality, pitch and intensity

Question Number : 70 Question Id : 8946582874 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The quality of tone_____

Options :

1. ✗ decreases with loudness
2. ✗ varies inversely as amplitude
3. ✗ varies directly as pitch

4. ✓ depends on the overtones present

Question Number : 71 Question Id : 8946582875 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The conduction of heat from hot body to cold body is an example of _____.

Options :

1. ✗ reversible process
2. ✓ irreversible process
3. ✗ isothermal process
4. ✗ isobaric process

Question Number : 72 Question Id : 8946582876 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

From the isothermal drawn from Andrews experiment, it can be inferred that _____

Options :

1. ✗ CO_2 is a perfect gas
2. ✓ there is continuity of state
3. ✗ there is discontinuity of state
4. ✗ gases like CO_2 and H_2 cannot be liquefied

Question Number : 73 Question Id : 8946582877 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A diesel cycle works at _____

Options :

1. ✗ constant volume
2. ✓ constant pressure

3. ✖ constant temperature

4. ✖ both constant volume and constant temperature

Question Number : 74 Question Id : 8946582878 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The transition temperature of most low temperature superconducting elements is in the
range of _____

Options :

1. ✔ zero to 10 k

2. ✖ 10 k to 20 k

3. ✖ 20 k to 50 k

4. ✖ 50 k alone

Question Number : 75 Question Id : 8946582879 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Propagation of light through fiber core is due to _____

Options :

1. ✖ diffraction

2. ✖ interference

3. ✔ total internal reflection

4. ✖ reflection

Chemistry

Section Id :

89465858

Section Number :

3

Section type :

Online

Mandatory or Optional:

Mandatory

Number of Questions:

25

Number of Questions to be attempted:

25

Sub-Section Number:	1
Sub-Section Id:	89465863
Question Shuffling Allowed :	Yes

Question Number : 76 Question Id : 8946582880 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following energy orders is correct?

Options :

1. ✓ $6s < 4f < 5d < 6p$

2. ✗ $4f < 5d < 6s < 6p$

3. ✗ $4f < 6s < 6p < 5d$

4. ✗ $6s < 6p < 5d < 4f$

Question Number : 77 Question Id : 8946582881 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

An element A of atomic number 11 combines with an element B of atomic number 17. The compound formed is _____.

Options :

1. ✗ Covalent AB

2. ✓ Ionic AB

3. ✗ Covalent AB₂

4. ✗ Ionic AB₂

Question Number : 78 Question Id : 8946582882 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The oxidation number of 'S' in S₈, S₂F₂, H₂S respectively are _____.

Options :

1. ☒ 0, +1 and -2

2. ☐ +2, +1 and -2

3. ☐ 0, +1 and +2

4. ☐ -2, +1 and -2

Question Number : 79 Question Id : 8946582883 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The elements A, B, C and D have the following electronic configurations:

A: $1s^2, 2s^2, 2p^1$

B: $1s^2, 2s^2, 2p^6, 3s^2, 3p^1$

C: $1s^2, 2s^2, 2p^6, 3s^2, 3p^3$

D: $1s^2, 2s^2, 2p^6, 3s^2, 3p^5$

The elements that belong to same group are _____.

Options :

1. ☐ A and C

2. ☐ C and D

3. ☐ A and D

4. ☒ A and B

Question Number : 80 Question Id : 8946582884 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

4.9 gm of H_2SO_4 is present in 2 lit of its solution. The molarity of the solution is

_____.

Options :

1. ✖ 0.1 M
2. ✔ 0.025 M
3. ✖ 0.25 M
4. ✖ 0.01 M

Question Number : 81 Question Id : 8946582885 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The molecular weight of H_3PO_4 is 98. The equivalent weight is _____ gram / equivalents.

Options :

1. ✖ 98
2. ✖ 49
3. ✔ 32.66
4. ✖ 24.5

Question Number : 82 Question Id : 8946582886 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is the Bronsted acid?

Options :

1. ✖ Cl^-
2. ✖ NH_2^-
3. ✖ CH_3COO^-
4. ✔ NH_4^+

Question Number : 83 Question Id : 8946582887 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The pH of 1 M KOH is _____.

Options :

1. ✖ 12

2. ✖ 11

3. ✔ 14

4. ✖ 13

Question Number : 84 Question Id : 8946582888 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Froth floatation process is used for the _____.

Options :

1. ✖ Oxide ores

2. ✔ Sulphide ores

3. ✖ Chloride ores

4. ✖ Oxide ores and Chloride ores

Question Number : 85 Question Id : 8946582889 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The composition of brass is _____.

Options :

1. ✔ Cu and Zn

2. ✖ Cu and Ni

3. ✖ Cu and Mn

4. ✖ Cu and Fe

Question Number : 86 Question Id : 8946582890 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is correct?

Options :

1. ✖ Cathode is positive terminal in an electrolytic cell
2. ✖ Cathode is negative terminal in a galvanic cell
3. ✔ Reduction occurs at cathode in either of cells
4. ✖ Oxidation occurs at cathode in either of cells

Question Number : 87 Question Id : 8946582891 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the electrolysis of CuCl_2 solution using copper electrode, if 2.5 gm of Cu is deposited at cathode, then at anode _____.

Options :

1. ✖ 890 mL of Cl_2 at STP is liberated
2. ✖ 445 mL of O_2 at STP is liberated
3. ✖ 2.5 gm of copper is deposited
4. ✔ a decrease of 2.5 gm of mass takes place

Question Number : 88 Question Id : 8946582892 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The unit of resistivity is _____.

Options :

1. ✖ Ω
2. ✔ $\Omega \text{ m}$

3. ✖ Ω / m

4. ✖ $\Omega \text{ m}^2$

Question Number : 89 Question Id : 8946582893 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following metals provide cathodic protection to iron?

Options :

1. ✖ Cu and Ni

2. ✔ Al and Zn

3. ✖ Al and Cu

4. ✖ Co and Ni

Question Number : 90 Question Id : 8946582894 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The chemical composition of rust is _____.

Options :

1. ✖ Fe_3O_4

2. ✖ Fe_3O_3

3. ✔ $\text{Fe}_2\text{O}_3 \cdot n\text{H}_2\text{O}$

4. ✖ $\text{Fe}_3\text{O}_3 \cdot x\text{H}_2\text{O}$

Question Number : 91 Question Id : 8946582895 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

1 ppm of hardness of water is equal to _____.

Options :

1. ✔ 1 part of CaCO_3 hardness in 10^6 parts of water

2. ✖ 1 part of CaCO_3 hardness in 10^8 parts of water
3. ✖ 1 part of CaCO_3 hardness in 10^7 parts of water
4. ✖ 1 part of CaCO_3 hardness in 10^5 parts of water

Question Number : 92 Question Id : 8946582896 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The temporary hardness of water is due to the presence of _____.

Options :

1. ✖ MgCl_2 and CaCl_2
2. ✖ $\text{Ca}(\text{NO}_3)_2$ and $\text{Mg}(\text{NO}_3)_2$
3. ✖ CaSO_4 and MgSO_4
4. ✔ $\text{Ca}(\text{HCO}_3)_2$ and $\text{Mg}(\text{HCO}_3)_2$

Question Number : 93 Question Id : 8946582897 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The basic buffer solution is a mixture of _____.

Options :

1. ✔ $\text{NH}_3 + \text{NH}_4\text{Cl}$
2. ✖ $\text{HCl} + \text{NH}_4\text{Cl}$
3. ✖ $\text{NaCl} + \text{NH}_4\text{Cl}$
4. ✖ $\text{KOH} + \text{NH}_4\text{Cl}$

Question Number : 94 Question Id : 8946582898 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following polymers has amide linkage?

Options :

1. ✖ Terylene
2. ✖ Bakelite
3. ✔ Nylon
4. ✖ PVC

Question Number : 95 Question Id : 8946582899 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The monomer of natural rubber is _____.

Options :

1. ✖ Butadiene
2. ✖ Chloroprene
3. ✖ 2-methyl 1,2 butadiene
4. ✔ 2-methyl 1,3 butadiene

Question Number : 96 Question Id : 8946582900 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is a thermo setting?

Options :

1. ✔ Bakelite
2. ✖ Polyethylene
3. ✖ Nylon-6
4. ✖ Natural rubber

Question Number : 97 Question Id : 8946582901 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The composition of water gas is _____.

Options : <https://previouspaper.in>

1. ✓ CO and H₂ are combustible gases and CO₂ and N₂ are non-combustible gases
2. ✗ CO + CO₂ are combustible gases and H₂O and N₂ non-combustible gases
3. ✗ CO + N₂ are combustible gases and H₂O and H₂ are non-combustible gases
4. ✗ N₂ + H₂ are combustible gases and CO + H₂O are non-combustible gases

Question Number : 98 Question Id : 8946582902 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Earth is protected from UV radiation by _____.

Options :

1. ✗ Nitrogen layer
2. ✓ Ozone layer
3. ✗ Carbon dioxide layer
4. ✗ Oxygen layer

Question Number : 99 Question Id : 8946582903 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of following statements is not correct?

Options :

1. ✗ CO is the main air pollutant
2. ✗ All pollutants are not wastes
3. ✓ Water is polluted by dissolved Oxygen
4. ✗ Lichens are pollution indicators

Question Number : 100 Question Id : 8946582904 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Minamata disease is caused due to the presence of _____.

Options :

1. ✖ Cd
2. ✖ Pb
3. ✖ As
4. ✔ Hg

Electronics and Instrumentation Engineering

Section Id :	89465859
Section Number :	4
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	100
Number of Questions to be attempted:	100
Section Marks:	100
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	89465864
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 8946582905 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$R_1 = 36 \Omega$ and $R_2 = 75 \Omega$, each having tolerance of $\pm 5\%$ are connected in series.

The value of resultant resistance is

Options :

1. ✖ $111 \pm 0 \Omega$.
2. ✖ $111 \pm 2.77 \Omega$.
3. ✔ $111 \pm 5.55 \Omega$.
4. ✖ $111 \pm 7.23 \Omega$.

Correct Marks : 1 Wrong Marks : 0

Pick the incorrect statement among the following

Options :

1. ✖ inductor is a passive element
2. ✖ current source is an active element
3. ✖ resistor is a passive element
4. ✔ voltage source is a passive element

Question Number : 103 Question Id : 8946582907 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Thevenin impedance Z_{Th} is found

Options :

1. ✖ by short-circuiting the given two terminals
2. ✖ between any two open terminals
3. ✖ by removing voltage sources along with the internal resistances
4. ✔ between same open terminals as for V_{Th}

Question Number : 104 Question Id : 8946582908 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which among the following is also regarded as 'Dual of Thevenin's Theorem'?

Options :

1. ✔ Norton's Theorem
2. ✖ Superposition Theorem
3. ✖ Millman's Theorem
4. ✖ Maximum Power Transfer Theorem

Question Number : 105 Question Id : 8946582909 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In A.C generator increasing number of turns in coil

Options :

1. ✗ Decreases the EMF
2. ✓ Increases the EMF
3. ✗ EMF remains same
4. ✗ EMF becomes zero

Question Number : 106 Question Id : 8946582910 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Most seven-segment displays are driven with an encoder that converts a binary encoded nibble into a _____ .

Options :

1. ✗ binary number
2. ✓ numeric number
3. ✗ octal number
4. ✗ hexadecimal number

Question Number : 107 Question Id : 8946582911 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Phototransistor produces more current than a photodiode because

Options :

1. ✗ the phototransistor can be more heavily doped than the photodiode
2. ✗ the photo transistor accepts a wider spectrum of light than the photodiode
3. ✓ the current produced by photons is amplified by the h_{fe} of the transistor
4. ✗ the photodiode is normally used in low light conditions

Question Number : 108 Question Id : 8946582912 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For which of the following, the parameters spatial-peak, temporal-average and pulse-average must be considered when expressing values for ultrasound?

Options :

1. ☒ intensity
2. ☐ absorption
3. ☐ velocity
4. ☐ pulse rate

Question Number : 109 Question Id : 8946582913 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The current density of a photo voltaic cell ranges from

Options :

1. ☐ 10 – 20 mA/cm²
2. ☒ 40 – 50 mA/cm²
3. ☐ 20 – 40 mA/cm²
4. ☐ 60 – 100 mA/cm²

Question Number : 110 Question Id : 8946582914 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In a second order system, the time constant t of exponential envelopes depends

Options :

1. ☐ only on damping factor
2. ☐ only on natural frequency
3. ☐ both on damping factor and natural frequency
4. ☒ neither on damping factor nor on natural frequency

Question Number : 111 Question Id : 8946582915 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If poles are added to the system, where will the system tend to shift the root locus?

Options :

1. ✖ to the left of an imaginary axis
2. ✔ to the right of an imaginary axis
3. ✖ at the center
4. ✖ no shifting takes place

Question Number : 112 Question Id : 8946582916 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the unity feedback system is given by the open loop transfer function

$G(s) = ks^2 / [(1 + 0.3s)(1 + 0.05s)]$, what would be the initial slope of magnitude plot?

Options :

1. ✖ 20 dB/decade
2. ✔ 40 dB/decade
3. ✖ 60 dB/decade
4. ✖ unpredictable

Question Number : 113 Question Id : 8946582917 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A system has the characteristic equation $s^3 + 4Ks^2 + (5+K)s + 10 = 0$ The range of K for a stable system is:

Options :

1. ✖ $0 < K < 0.46$
2. ✖ $K < 0$
3. ✔ $K > 0.46$
4. ✖ unstable for all K

Question Number : 114 Question Id : 8946582918 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Utilizing the Routh-Hurwitz criterion, determine whether the following poly-nomials are stable or unstable: $p_1(s)=s^2+10s+5=0$, $p_2(s)=s^4+s^3+5s^2+20s+10=0$

Options :

1. ✖ $p_1(s)$ is unstable, $p_2(s)$ is stable
2. ✔ $p_1(s)$ is stable, $p_2(s)$ is unstable
3. ✖ $p_1(s)$ is unstable, $p_2(s)$ is unstable
4. ✖ $p_1(s)$ is stable, $p_2(s)$ is stable

Question Number : 115 Question Id : 8946582919 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The following statements are made

- A. Use no derivative action if the process signal is “noisy”
- B. Use proportional action sparingly if the process signal is “noisy”

Options :

1. ✖ A is true B is False
2. ✖ A is false and B is true
3. ✔ A is true and B is true
4. ✖ A is False and B also False

Question Number : 116 Question Id : 8946582920 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The step error coefficient of a system $G(s) = 1/(s+6)(s+1)$ with unity feedback is

Options :

1. ✔ $1/6$
2. ✖ ∞
3. ✖ 0

4. ✖ 1

Question Number : 117 Question Id : 8946582921 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A diode is operating in forward region and the forward voltage and current are

$v = 3 + 0.3 \sin \omega t$ volts and $i = 5 + 0.2 \sin \omega t$ mA. The average power dissipated is

Options :

- 1. ✖ 20 mW
- 2. ✔ about 15 mW
- 3. ✖ about 1.5 mW
- 4. ✖ 150 mW

Question Number : 118 Question Id : 8946582922 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A bimetallic thermometer essentially consists of a bimetallic strip made up of two strips of _____ welded together

Options :

- 1. ✔ different metals
- 2. ✖ same metals
- 3. ✖ one metal and one insulator
- 4. ✖ one semiconductor and one metal

Question Number : 119 Question Id : 8946582923 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Derivative control action is effective

Options :

- 1. ✖ only during steady state periods

2. ☒ only during transient state periods
3. ☐ during both steady state and transient state periods
4. ☐ either during steady state or transient state periods

Question Number : 120 Question Id : 8946582924 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a bipolar transistor _____.

Options :

1. ☒ $\beta_{dc} = \alpha_{dc} / 1 - \alpha_{dc}$
2. ☐ $\beta_{dc} = \alpha_{dc} / 1 + \alpha_{dc}$
3. ☐ $\beta_{dc} = 1 - \alpha_{dc} / \alpha_{dc}$
4. ☐ $\beta_{dc} = 1 + \alpha_{dc} / \alpha_{dc}$

Question Number : 121 Question Id : 8946582925 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A transistor has a current gain (β) of 150. Find the emitter current if base current (I_B) is $10\mu A$.

Options :

1. ☐ 1.50 mA
2. ☐ 1.1 mA
3. ☐ 1.0 mA
4. ☒ 1.51mA

Question Number : 122 Question Id : 8946582926 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the total phase shift requirement, around the feedback loop, for a phase-shift oscillator?

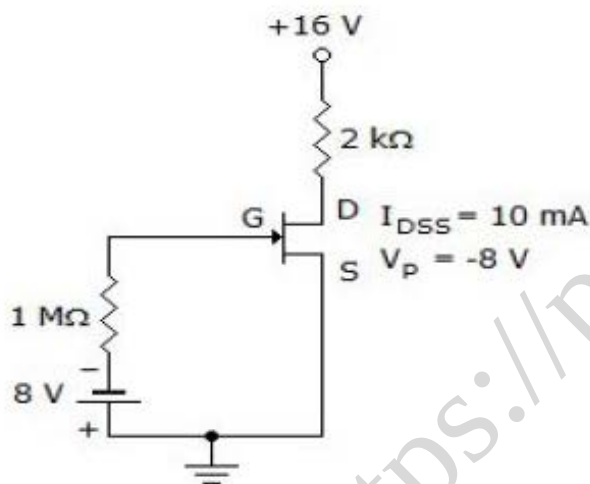
Options :

1. ✗ 90
2. ✗ 180
3. ✗ 270
4. ✓ 360

Question Number : 123 Question Id : 8946582927 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Calculate the value of the V_{DS} in the circuit shown below



Options :

1. ✗ 10 V
2. ✗ 8 V
3. ✗ 4.75 V
4. ✓ 16 V

Question Number : 124 Question Id : 8946582928 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The gain of an amplifier without feedback is 100 dB. If a negative feedback of 3 dB is applied, the gain of the amplifier will become

Options :

1. ✖ 5dB
2. ✖ 300dB
3. ✖ 103dB
4. ✔ 97dB

Question Number : 125 Question Id : 8946582929 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Calculate the efficiency of a class B amplifier for a supply voltage of 20 V and peak voltage of 10V.

Options :

1. ✖ 50%
2. ✔ 39.27 %
3. ✖ 29.37%
4. ✖ 61.73%

Question Number : 126 Question Id : 8946582930 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the analysis of a common emitter amplifier, which of the following may be neglected?

Options :

1. ✔ h_{re}
2. ✖ h_{ve}
3. ✖ h_{fe}
4. ✖ h_{ie}

Question Number : 127 Question Id : 8946582931 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Express the 72.45 decimal number in octal number?

Options :

1. ✖ 109.24

2. ✔ 110.34

3. ✖ 111.54

4. ✖ 112.43

Question Number : 128 Question Id : 8946582932 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Add +64 and -29 numbers using 2's complement method

Options :

1. ✔ 0010 0011

2. ✖ 0110 1100

3. ✖ 1101 1001

4. ✖ 1001 0110

Question Number : 129 Question Id : 8946582933 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Simplify the expression $ABC + \bar{A}BC + A\bar{B}C + AB\bar{C} + A\bar{B}\bar{C} + \bar{A}B\bar{C} + \bar{A}\bar{B}\bar{C}$

Options :

1. ✖ $A + \bar{B}\bar{C}$

2. ✖ $\bar{A} + \bar{B} + \bar{C}$

3. ✖ $\bar{A}B + C$

4. ✔ $A + B + \bar{C}$

Correct Marks : 1 Wrong Marks : 0

Obtain the canonical sum of products of $f = x_1x_2x_3 + x_1x_3x_4 + x_1x_2x_4$

Options :

1. ✖ $f = x_1\bar{x}_2x_3x_4 + x_1x_2x_3\bar{x}_4 + x_1x_2\bar{x}_3x_4 + x_1\bar{x}_2x_3x_4$

2. ✔ $f = x_1x_2x_3x_4 + x_1x_2x_3\bar{x}_4 + x_1x_2\bar{x}_3x_4 + x_1\bar{x}_2x_3x_4$

3. ✖ $f = x_1\bar{x}_2x_3x_4 + x_1\bar{x}_2x_3\bar{x}_4 + x_1x_2\bar{x}_3x_4 + x_1\bar{x}_2x_3x_4$

4. ✖ $f = \bar{x}_1x_2x_3x_4 + x_1x_2x_3\bar{x}_4 + x_1x_2\bar{x}_3x_4 + x_1\bar{x}_2x_3\bar{x}_4$

Question Number : 131 Question Id : 8946582935 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Apply De Morgan's theorem to $\overline{(\bar{A} + B + C + D)} + \overline{A\bar{B}\bar{C}D}$

Options :

1. ✖ $\bar{A}\bar{B}\bar{C}\bar{D}$

2. ✖ $\bar{A}BC\bar{D}$

3. ✔ $A\bar{B}\bar{C}D$

4. ✖ $ABCD$

Question Number : 132 Question Id : 8946582936 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Using K-map, obtain the minimum product of sum for

$$f(w, x, y, z) = \sum(1, 3, 4, 5, 6, 7, 9, 12, 13)$$

Options :

1. ✔ $f = (\bar{w} + \bar{y})(x + z)$

2. ✖ $f = (\bar{x} + \bar{z})(x + z)$

3. ✖ $f = (x + y)(x + z)$

4. ✖ $f = (\bar{x} + z)(x + z)$

Question Number : 133 Question Id : 8946582937 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When the output of an AND gate is HIGH with three inputs, A, B, and C.

Options :

1. ✖ $A = 1, B = 1, C = 0$

2. ✖ $A = 0, B = 0, C = 0$

3. ✔ $A = 1, B = 1, C = 1$

4. ✖ $A = 1, B = 0, C = 1$

Question Number : 134 Question Id : 8946582938 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A 2-input NOR gate is equivalent to a _____

Options :

1. ✖ negative-OR gate

2. ✔ negative-AND gate

3. ✖ negative-NAND gate

4. ✖ negative-NOR gate

Question Number : 135 Question Id : 8946582939 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The output of an exclusive-OR gate is LOW if _____

Options :

1. ✔ the inputs are equal

2. ✖ one input is HIGH and the other input is LOW

3. ✖ it is independent of inputs

4. ✖ one input is LOW and the other output is HIGH

Question Number : 136 Question Id : 8946582940 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the minterm designation $Y = \sum m(1, 3, 5, 7)$ the complete expression is _____

Options :

1. ✖ $Y = \bar{A}\bar{B}C + A\bar{B}C$

2. ✖ $Y = \bar{A}\bar{B}C + A\bar{B}C + ABC + \bar{A}BC$

3. ✖ $Y = \bar{A}\bar{B}C + A\bar{B}C + \bar{A}BC + A\bar{B}C$

4. ✔ $Y = \bar{A}\bar{B}\bar{C} + ABC + \bar{A}\bar{B}C + A\bar{B}C$

Question Number : 137 Question Id : 8946582941 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a clocked NAND latch, race around condition occurs when _____

Options :

1. ✖ R and S are high and CLK is low

2. ✖ R and CLK are high and S is low

3. ✔ R, CLK, S are high

4. ✖ R, CLK, S are low

Question Number : 138 Question Id : 8946582942 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Latches constructed with NOR and NAND gates tend to remain in the latched condition due to which configuration feature?

Options :

1. ✖ low input voltages

- 2. ✖ synchronous operation
- 3. ✖ gate impedance
- 4. ✔ cross coupling

Question Number : 139 Question Id : 8946582943 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Characteristic equation of the S-R latch is _____

Options :

- 1. ✖ $Q_{n+1} = (S + R)Q_n$
- 2. ✔ $Q_{n+1} = (S + Q_n \bar{R})$
- 3. ✖ $Q_{n+1} = (\bar{S} + R)Q_n$
- 4. ✖ $Q_{n+1} = Q_n$

Question Number : 140 Question Id : 8946582944 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the output of two-bit asynchronous binary up counter using T flip flops is '00' at reset condition, then what output will be generated after the fourth negative clock edge?

Options :

- 1. ✔ 00
- 2. ✖ 01
- 3. ✖ 10
- 4. ✖ 11

Question Number : 141 Question Id : 8946582945 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is toggle condition in J-K flip flop ?

Options : <https://previouspaper.in>

1. ✖ J=0, K=0

2. ✖ J=0, K=1

3. ✖ J=1, K=0

4. ✔ J=1, K=1

Question Number : 142 Question Id : 8946582946 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is correct for a gated D-type flip-flop?

Options :

1. ✔ the Q output is either SET or RESET as soon as the D input goes HIGH or LOW

2. ✖ the output complement follows the input when enabled

3. ✖ only one of the inputs can be HIGH at a time

4. ✖ the output toggles if one of the inputs is held HIGH

Question Number : 143 Question Id : 8946582947 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How many IC74154 (4 to 16 decoder) IC's are necessary to decode a six digit binary number?

Options :

1. ✔ 4

2. ✖ 3

3. ✖ 2

4. ✖ 1

Question Number : 144 Question Id : 8946582948 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The expression $Y(A,B,C) = \sum m(1,3,5,6)$ is to be realized using a multiplexer. Then

1. ✖ Use 8 : 1 multiplexer and ground input lines 1, 3, 5, 6
2. ✔ Use 8 : 1 multiplexer and ground input lines 0, 2, 4, 7
3. ✖ Use 8 : 1 multiplexer and ground input lines 0, 1, 2, 3
4. ✖ Use 8 : 1 multiplexer and ground input lines 4, 5, 6, 7

Question Number : 145 Question Id : 8946582949 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Determine the limiting error (in percent) in case of an instrument reading of 83 V with a 0-150 V voltmeter having a guaranteed accuracy of 1% full scale reading.

Options :

1. ✔ 1.81 %
2. ✖ 18.1 %
3. ✖ 0.18 %
4. ✖ 11.1 %

Question Number : 146 Question Id : 8946582950 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Calculate the maximum percentage error in the sum and difference of two voltage measurements when $V_1 = 100V \pm 1\%$ and $V_2 = 80V \pm 5\%$.

Options :

1. ✖ $180V \pm 2.2\%$, $20V \pm 22\%$
2. ✖ $180V \pm 2.4\%$, $20V \pm 23\%$
3. ✖ $180V \pm 2.6\%$, $20V \pm 24\%$
4. ✔ $180V \pm 2.8\%$, $20V \pm 25\%$

Correct Marks : 1 Wrong Marks : 0

If carrier power is 'P' and amplitude modulation index is 'm', then the total power after modulation is _____

Options :

1. ✗ P
2. ✗ mP
3. ✗ $P(1+m)$
4. ✓ $P(1 + m^2/ 2)$

Question Number : 148 Question Id : 8946582952 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A 0-1 mA meter has a sensitivity of _____

Options :

1. ✓ 1 Kw/V
2. ✗ 1 mA
3. ✗ 1 Kw
4. ✗ 1000 A

Question Number : 149 Question Id : 8946582953 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Moving iron instruments can be used as _____

Options :

1. ✗ Standard instruments for calibration of other instruments.
2. ✗ Transfer type instruments.
3. ✓ Indicator type instruments as on panels

4. ✖ PID

Question Number : 150 Question Id : 8946582954 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In D'Arsonval galvanometer, an iron core is usually used between the permanent magnet pole faces. This is used so that _____

Options :

1. ✔ flux density in the air gap becomes high thereby a large deflecting torque is produced
2. ✖ the effect of stray magnetic Fields is reduced.
3. ✖ moment of inertia of moving parts becomes smaller.
4. ✖ the effect of stray magnetic Fields is increased

Question Number : 151 Question Id : 8946582955 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The value of resistance as measured by a Wheatstone bridge is $10.0 \text{ k } \Omega$ by using a voltage source of 10.0 V . The value of resistance measured by the same bridge by using 15.0 V is _____.

Options :

1. ✖ $15.0 \text{ k } \Omega$
2. ✔ $10.0 \text{ k } \Omega$
3. ✖ $16.0 \text{ k } \Omega$
4. ✖ $15.5 \text{ k } \Omega$

Question Number : 152 Question Id : 8946582956 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The reading of high impedance voltmeter V in the bridge circuit shown in given

Fig.1 is _____

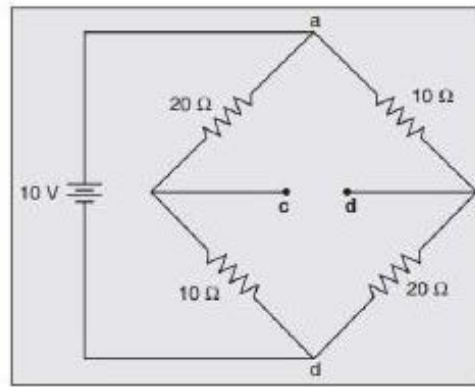


Fig.1

Options :

1. ✗ 0 V
2. ✓ 3.33 V
3. ✗ 4.20 V
4. ✗ 6.66 V

Question Number : 153 Question Id : 8946582957 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The current through a pure capacitor is _____

Options :

1. ✓ displacement current
2. ✗ conduction current
3. ✗ partly displacement current and Partly conduction current
4. ✗ either conduction current or displacement current

Question Number : 154 Question Id : 8946582958 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Maxwell inductance capacitance bridge is used for measurement of inductance of _____

Options :

1. ✖ low Q coils
2. ✔ medium Q coils
3. ✖ high Q coils
4. ✖ low and medium Q coils

Question Number : 155 Question Id : 8946582959 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Frequency can be measured by using _____

Options :

1. ✖ Maxwell bridge
2. ✖ Schering bridge
3. ✖ Heaviside Campbell bridge
4. ✔ Wien bridge

Question Number : 156 Question Id : 8946582960 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Wagner earth in AC bridge circuits is used to eliminate the effect of _____

Options :

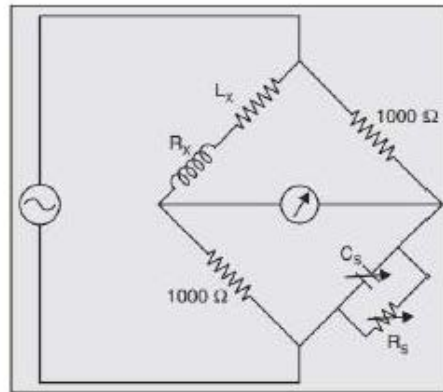
1. ✖ Stray electrostatic fields
2. ✖ Stray electromagnetic fields
3. ✔ Parasitic capacitance to earth
4. ✖ Inter-component capacitances

Question Number : 157 Question Id : 8946582961 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the bridge circuit shown in the following Fig., at balance condition, the value of $C_s = 0.5 \mu F$ and $R_s = 1000 \Omega$,

The values of inductance L_X and resistance R_X are _____.



Options :

1. ✓ $L_X = 0.5 H$, $R_X = 1000 \Omega$
2. ✗ $L_X = 0.25 H$, $R_X = 2000 \Omega$
3. ✗ $L_X = 0.5 H$, $R_X = 3000 \Omega$
4. ✗ $L_X = 0.25 H$, $R_X = 500 \Omega$

Question Number : 158 Question Id : 8946582962 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The source of emission of electrons in a CRT is _____

Options :

1. ✗ PN junction diode
2. ✓ A barium and strontium oxide coated cathode
3. ✗ Accelerating anodes
4. ✗ Post-accelerating anodes

Question Number : 159 Question Id : 8946582963 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which one of the following is the correct statement? Active probe used in a CRO _____

Options : <https://previouspaper.in>

1. ✖ is bulk than passive ones
2. ✖ cannot measure small signals
3. ✔ cannot couple high frequency signals
4. ✖ can attenuate more

Question Number : 160 Question Id : 8946582964 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The X and Y inputs to a CRO are respectively $10 \cos (100t + \theta)$ and $10 \sin (wt + \theta)$ the resulting Lissajous pattern is

Options :

1. ✖ a straight line inclined at an angle θ
2. ✖ a horizontal line
3. ✖ an ellipse with axis making an angle θ
4. ✔ a circle

Question Number : 161 Question Id : 8946582965 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following transducers requires power supply for its operation _____

Options :

1. ✖ Thermocouple
2. ✖ Photovoltaic Cell
3. ✖ Piezoelectric Crystal
4. ✔ Thermistor

Question Number : 162 Question Id : 8946582966 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An LVDT produces an rms output voltage of 2.6 V for displacement of 0.4 μm . Calculate the sensitivity of LVDT

Options :

1. ☒ 6.5 V/ μm
2. ☐ 7.5 V/ μm
3. ☐ 8.5 V/ μm
4. ☐ 9.5 V/ μm

Question Number : 163 Question Id : 8946582967 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Radiation of pyrometer is used to measure temperature in the range of _____

Options :

1. ☐ -200°C to 500°C
2. ☐ -100°C to -150°C
3. ☐ 501°C to 1150°C
4. ☒ 1200°C to 2500°C

Question Number : 164 Question Id : 8946582968 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Hydrometer is employed for determination of _____

Options :

1. ☐ relative humidity
2. ☒ specific gravity of liquids
3. ☐ fluid level
4. ☐ sensitivity

Question Number : 165 Question Id : 8946582969 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In optical pyrometer temperature is measured by_____

Options :

1. ✖ thermocouple effect
2. ✖ photocell principle
3. ✔ comparison of brightness of the source with that of a standard source
4. ✖ change in resistance

Question Number : 166 Question Id : 8946582970 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For a piezoelectric transducer, the output voltage is given by_____

Options :

1. ✖ $V = 4 gtp$
2. ✖ $V = 2 gtp$
3. ✔ $V = gtp$
4. ✖ $V = 2 gp$

Question Number : 167 Question Id : 8946582971 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The main objective of a process control is _____

Options :

1. ✔ to control physical parameters
2. ✖ to control mechanical parameters
3. ✖ to control optical parameters
4. ✖ to control electrical parameters

As per BIS, the number of accuracy classes of instruments is _____.

Options :

1. ✖ 5

2. ✖ 6

3. ✖ 7

4. ✔ 8

The integral controller _____

Options :

1. ✖ increases the steady state error

2. ✔ decreases the steady state error

3. ✖ increases the noise and stability

4. ✖ decreases the damping coefficient

The number of operational amplifiers required for designing the electronic PID controller is _____

Options :

1. ✖ 1

2. ✖ 2

3. ✔ 3

4. ✖

Question Number : 171 Question Id : 8946582975 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a PID controller, the offset has been increased. The integral time constant has to be _____
so as to reduce offset.

Options :

1. ✖ reduced
2. ✔ increased
3. ✖ exactly zero
4. ✖ no change

Question Number : 172 Question Id : 8946582976 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which controller has the potential to eliminate/overcome the drawback of offset in
proportional controllers?

Options :

1. ✔ P-I controller
2. ✖ P-D controller
3. ✖ I-D controller
4. ✖ PID controller

Question Number : 173 Question Id : 8946582977 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which time is responsible for introducing an error in the temperature regulation of
applications associated with ON-OFF controllers?

Options :

1. ✖ rise time
2. ✔ dead time
3. ✖ switching time
4. ✖ decay time

Question Number : 174 Question Id : 8946582978 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The basic function of the spring in a control valve is to _____

Options :

1. ✖ characterize flow
2. ✔ oppose the diaphragm so as to position the valve according to signal pressure
3. ✖ close the valve if air failure occurs
4. ✖ open the valve if air failure occurs

Question Number : 175 Question Id : 8946582979 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A single seated globe valve containing a plug $1\frac{1}{2}$ inches in diameter is used in a line
pressurized to 500 psi. What actuator force is required for tight Shutoff?

Options :

1. ✖ 884 pounds
2. ✖ 2,000 pounds
3. ✔ depends upon direction of flow through the valve
4. ✖ independent of direction of flow through the valve

Question Number : 176 Question Id : 8946582980 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following gauges can measure the lowest vacuum pressure?

Options :

1. ✖ Mc Lead gauge
2. ✖ Pirani gauge
3. ✔ Ionization gauge
4. ✖ Strain gauge

Question Number : 177 Question Id : 8946582981 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The light emitting region is available in lengths from _____

Options :

1. ✖ 1.5 mm to 2.5 mm
2. ✔ 2.5 mm to 25 mm
3. ✖ 0.1 mm to 1.5 mm
4. ✖ 25 mm to 50 mm

Question Number : 178 Question Id : 8946582982 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following should be incorporated in RTD to make a temperature sensing bridge most sensitive to temperature?

Options :

1. ✖ Platinum
2. ✖ Nickel
3. ✔ Thermistor
4. ✖ Copper

Correct Marks : 1 Wrong Marks : 0

Non-contact type temperature sensor is _____

Options :

1. ✖ Thermocouple
2. ✔ Radiation pyrometer
3. ✖ Thermistor
4. ✖ SCR

Question Number : 180 Question Id : 8946582984 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A message signal $m(t) = \frac{1}{3} \cos(w_1 t) - \frac{1}{2} \cos(w_2 t)$ is amplitude modulated with a carrier of frequency w_c to generate $s(t) = [1 + m(t)] \cos(w_c t)$. The power efficiency achieved by this AM scheme is _____

Options :

1. ✔ 8%
2. ✖ 12%
3. ✖ 16%
4. ✖ 25%

Question Number : 181 Question Id : 8946582985 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The angle modulated signal is given by $s(t) = 10 \cos(2\pi \cdot 2 \times 10^8 t + 1000 \cos(2000\pi t))$. The average power of $s(t)$ is _____

Options :

1. ✖ 100 W

- 2. ✗ 1000 W
- 3. ✓ 50 W
- 4. ✗ 500 W

Question Number : 182 Question Id : 8946582986 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

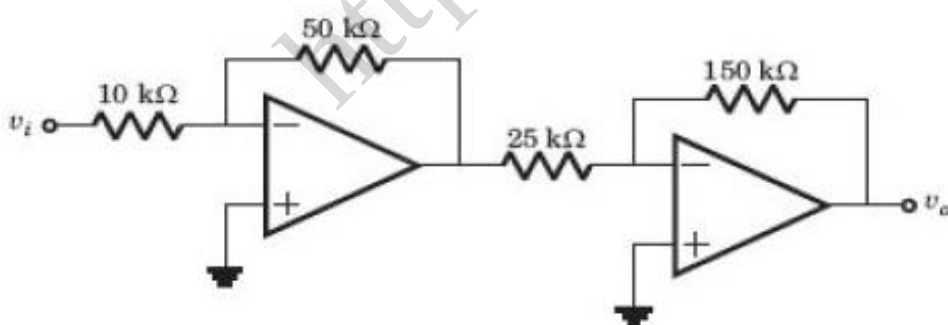
A signal $x(t) = 10\cos(400\pi t)$ is ideally sampled with a sampling period of $40 \mu s$ and passed through ideal low pass filter with a cut off frequency 1KHz. Which of the following frequencies is present at the output of the filter?

Options :

- 1. ✗ 2000 Hz
- 2. ✗ 1000 Hz
- 3. ✗ 1500 Hz
- 4. ✓ 500 Hz

Question Number : 183 Question Id : 8946582987 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In the circuit shown in figure the input voltage $V_i = 0.2V$. The output voltage $V_o = ?$



Options :

- 1. ✗ 6V
- 2. ✓ -6V

3. ✖ 8V

4. ✖ -8V

Question Number : 184 Question Id : 8946582988 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a CE amplifier, the output voltage is equal to the product of _____.

(Where AC is alternating current)

Options :

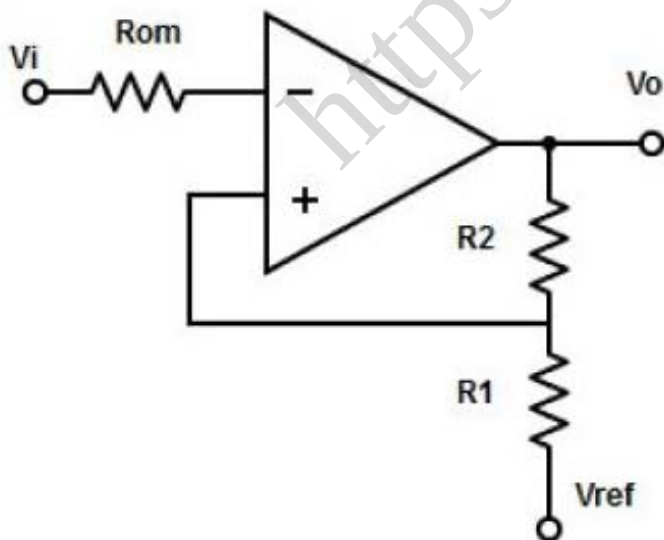
1. ✔ AC collector current and AC collector resistance
2. ✖ AC base current and AC collector resistance
3. ✖ AC emitter current and AC emitter resistance
4. ✖ AC collector current and source resistance

Question Number : 185 Question Id : 8946582989 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Calculate the hysteresis voltage for the Schmitt trigger from the given specification:

$R_2 = 56 \text{ K}\Omega$, $R_1 = 100 \text{ }\Omega$, $V_{\text{ref}} = 0 \text{ V}$ & $V_{\text{sat}} = \pm 14 \text{ V}$.



Options :

1. ✖ 0 mV

2. ✖ 25 mV

3. ✔ 50 mV

4. ✖ -25 mV

Question Number : 186 Question Id : 8946582990 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Alpha rays have a/an _____ velocity and a/an _____ range for each radioactive nuclide.

Options :

1. ✔ definite, definite

2. ✖ different, different,

3. ✖ increasing, increasing

4. ✖ decreasing, decreasing

Question Number : 187 Question Id : 8946582991 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Winemakers test grape juice before, during and after fermentation with which of the following instruments?

Options :

1. ✖ a refractometer

2. ✖ a speedometer

3. ✔ a hydrometer

4. ✖ a gyrometer

Question Number : 188 Question Id : 8946582992 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Energy passing through unit area is _____

Options : <https://previouspaper.in>

1. ✓ intensity of x-ray
2. ✗ frequency of x-ray
3. ✗ wavelength of x-ray
4. ✗ amplitude of x-ray

Question Number : 189 Question Id : 8946582993 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Normal EEG frequency range is _____.

Options :

1. ✗ 50-500 Hz
2. ✓ 0.5-50 HZ
3. ✗ 0.05-5 Hz
4. ✗ 0.01 – 0.05 Hz

Question Number : 190 Question Id : 8946582994 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In new spectrometers, each ion hits a/an _____.

Options :

1. ✓ detector
2. ✗ ionizer
3. ✗ collector
4. ✗ graph

Question Number : 191 Question Id : 8946582995 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The direction of induced emf is given by _____.

Options : <https://previouspaper.in>

1. ✓ Fleming's right hand rule
2. ✗ Cork screw rule
3. ✗ Kirchoff's current law
4. ✗ Kirchoff's voltage law

Question Number : 192 Question Id : 8946582996 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Due to which phenomena, sound is heard at longer distances in nights than in day?

Options :

1. ✗ reflection
2. ✓ refraction
3. ✗ interference of sound
4. ✗ diffraction of sound

Question Number : 193 Question Id : 8946582997 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is the chopping frequency used for industrial analyzers in the simple infrared analyzer for gas analysis?

Options :

1. ✓ 2-10 Hz
2. ✗ 11-20 Hz
3. ✗ 21-30 Hz
4. ✗ 31-40 Hz

Question Number : 194 Question Id : 8946582998 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The movement of diaphragm in simple infrared analyzer for gas analysis results in which of the following?

Options :

1. ✖ variable resistance
2. ✖ variable inductance
3. ✔ variable capacitance
4. ✖ variable conductance

Question Number : 195 Question Id : 8946582999 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Nitrogen oxide cannot be directly analyzed using UV and Visible analyzers due to which of the following reasons?

Options :

1. ✖ less accuracy
2. ✖ very low range
3. ✖ it leads to contamination of the sample
4. ✔ it is transparent in UV visible regions

Question Number : 196 Question Id : 8946583000 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

8051 microcontroller is called 8 bit since _____ .

Options :

1. ✖ it has 8 address lines
2. ✖ it has 8 data lines
3. ✖ it has 8 bit registers

4. ✓ it has 8 bit ALU

Question Number : 197 Question Id : 8946583001 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How many 16 bit registers are there in 8051 series ?

Options :

1. ✓ 2

2. ✗ 3

3. ✗ 1

4. ✗ 0

Question Number : 198 Question Id : 8946583002 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How is the status of the carry, auxiliary carry and parity flag affected if the instruction is written as

MOV A, #9C

ADD A, #64H

Options :

1. ✗ CY=0, AC=0, P=0

2. ✗ CY=1, AC=1, P=0

3. ✗ CY=0, AC=1, P=0

4. ✓ CY=1, AC=1, P=1

Question Number : 199 Question Id : 8946583003 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In 8255, if $A_1=0$, $A_0=1$ then the input read cycle is performed from_____.

Options :

1. ✖ port A to data bus
2. ✔ port B to data bus
3. ✖ port C to data bus
4. ✖ CWR to data bus

Question Number : 200 Question Id : 8946583004 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How many inputs and outputs are there in a Medium PLC?

Options :

1. ✖ 100 and 200
2. ✖ 1000 and 4000
3. ✖ 2000 and 4000
4. ✔ 4000 and 8000