

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
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Ruler Required?:	No
Eraser Required?:	No
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Electronics and Communication Engineering

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Break time:	0
Group Marks:	200

Mathematics

Section Id :	89465852
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 : 8946582605 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 : 8946582606 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 : 8946582607 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 <https://previouspaper.in>

2. ✗ 5

3. ✗ 3

4. ✗ 1

Question Number : 4 Question Id : 8946582608 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 : 8946582609 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 : 8946582610 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 : 8946582611 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. ✓ $\frac{-1}{2}$

Question Number : 8 Question Id : 8946582612 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 : 8946582613 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 : 8946582614 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 : 8946582615 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 $y = \sec^2\left(\operatorname{Cot}^{-1}\frac{1}{2}\right) + \operatorname{cosec}^2\left(\tan^{-1}\frac{1}{3}\right)$, 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 : 8946582616 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 $\tan^{-1}\left(\frac{x+1}{x-1}\right) = \tan^{-1}(-7)$ 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 : 8946582617 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 : 8946582618 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. ✖ $\log(6 + \sqrt{10})$
<https://previouspaper.in>

4. ✖ 1

Question Number : 15 Question Id : 8946582619 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 : 8946582620 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 : 8946582621 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 : 8946582622 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 : 8946582623 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 :

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1. ✓ 14 cm
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2. ✗ $\sqrt{304}$ cm

3. ✗ 4 cm

4. ✗ $\sqrt{124}$ cm

Question Number : 20 Question Id : 8946582624 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 : 8946582625 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 : 8946582626 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 : 8946582627 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. ✖ $\frac{1}{75}$ <https://previouspaper.in>

Question Number : 24 Question Id : 8946582628 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 : 8946582629 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 : 8946582630 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 <https://previouspaper.in>

2. ✖ 4

3. ✖ e

4. ✔ 3

Question Number : 27 Question Id : 8946582631 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 : 8946582632 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. ✔ $\frac{9}{16}$

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4. ✖ $\frac{9}{8}$

Question Number : 29 Question Id : 8946582633 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 : 8946582634 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 : 8946582635 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 _____.
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Options :

1. ✖ 1
2. ✖ $\frac{8}{19}$
3. ✖ $\frac{35}{4}$
4. ✔ $\frac{27}{6}$

Question Number : 32 Question Id : 8946582636 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 : 8946582637 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. ✔ $\frac{\pi^2}{32}$

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2. ✖ $\frac{\pi}{32}$

3. ✖ $\frac{\pi^2}{16}$

4. ✖ $\frac{\pi}{16}$

Question Number : 34 Question Id : 8946582638 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 : 8946582639 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

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 : 8946582641 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 : 8946582642 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 : 8946582643 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 : 8946582644 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 : 8946582645 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 : 8946582646 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 : 8946582647 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 : 8946582648 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 : 8946582649 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 : 8946582650 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 : 8946582651 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 : 8946582652 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 : 8946582653 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 : 8946582654 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 : <https://previouspaper.in>

1. ✓

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

2. ✗

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

3. ✗

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

4. ✗

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

Physics

Section Id :

89465853

Section Number :

2

Section type :

Online

Mandatory or Optional:

Mandatory

Number of Questions:

25

Number of Questions to be attempted:

25

Section Marks:

25

Display Number Panel:

Yes

Group All Questions:

No

Sub-Section Number:

1

Sub-Section Id:

89465858

Question Shuffling Allowed :

Yes

Question Number : 51 Question Id : 8946582655 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. ✗

$$L^3T^1M^{-3}$$

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.

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. ✓ $\mathbf{k} \times \mathbf{i} = -\mathbf{j}$

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

Question Number : 55 Question Id : 8946582659 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 : 8946582660 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 : 8946582661 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
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4. ✖ at the centre of the earth

Question Number : 58 Question Id : 8946582662 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 : 8946582663 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 : 8946582664 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 :

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1. ✖ 50%

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2. ✖ 100%

3. ✔ 125%

4. ✖ 25%

Question Number : 61 Question Id : 8946582665 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 : 8946582666 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. ✔ $25u$

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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 : 8946582668 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 : 8946582669 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. $2\pi\sqrt{b}$ <https://previouspaper.in>

3. $2\pi/b$

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

Question Number : 66 Question Id : 8946582670 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 : 8946582671 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 : 8946582672 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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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_____.

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Options :

1. ✓ 100
2. ✗ 90
3. ✗ 80
4. ✗ 900

Question Number : 69 Question Id : 8946582673 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 : 8946582674 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

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4. ✓ depends on the overtones present
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Question Number : 71 Question Id : 8946582675 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 : 8946582676 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 : 8946582677 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
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4. ✖ both constant volume and constant temperature

Question Number : 74 Question Id : 8946582678 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 : 8946582679 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

Section Id :
Section Number :
Section type :
Mandatory or Optional:
Number of Questions:
Number of Questions to be attempted:

Chemistry

89465854

3

Online

Mandatory

25

25

Section Marks:
Display Number Panel:
Group All Questions:

25
Yes
No

Sub-Section Number: 1
Sub-Section Id: 89465859
Question Shuffling Allowed : Yes

Question Number : 76 Question Id : 8946582680 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 : 8946582681 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 : 8946582682 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 : <https://previouspaper.in>

1. ☒ 0, +1 and -2
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2. ☐ +2, +1 and -2

3. ☐ 0, +1 and +2

4. ☐ -2, +1 and -2

Question Number : 79 Question Id : 8946582683 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 : 8946582684 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 :

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1. ✖ 0.1 M
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2. ✔ 0.025 M

3. ✖ 0.25 M

4. ✖ 0.01 M

Question Number : 81 Question Id : 8946582685 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 : 8946582686 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^+

The pH of 1 M KOH is _____.

Options :

1. ✖ 12

2. ✖ 11

3. ✔ 14

4. ✖ 13

Question Number : 84 Question Id : 8946582688 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 : 8946582689 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 : 8946582690 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 : 8946582691 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 : 8946582692 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
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4. ✖ $\Omega \text{ m}^2$

Question Number : 89 Question Id : 8946582693 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 : 8946582694 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 : 8946582695 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
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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 : 8946582696 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 : 8946582697 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 : 8946582698 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 :

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1. ✖ Terylene
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2. ✖ Bakelite

3. ✔ Nylon

4. ✖ PVC

Question Number : 95 Question Id : 8946582699 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 : 8946582700 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 : 8946582701 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 _____.

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Options :

1. ✓ CO and H₂ are combustible gases and CO₂ and N₂ are non-combustible gases
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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 : 8946582702 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 : 8946582703 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 : 8946582704 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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Minamata disease is caused due to the presence of _____.

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Options :

1. ✖ Cd
2. ✖ Pb
3. ✖ As
4. ✔ Hg

Electronics and Communication Engineering

Section Id :	89465855
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:	89465860
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 8946582705 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 capacitance of a reverse-biased PN-junction _____.

Options :

1. ✖ makes the PN junction more effective at high frequencies
2. ✔ increases as the reverse bias is decreased
3. ✖ depends mainly on the reverse saturation current
4. ✖ increases as the reverse bias is increased

Question Number : 102 Question Id : 8946582706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
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Correct Marks : 1 Wrong Marks : 0

The signal handling capacity of an amplifier is high if _____

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Options :

1. ✖ the operating point is selected near the cut-off region
2. ✔ the operating point is selected in the middle of the active region
3. ✖ the operating point is selected near the saturation region
4. ✖ the operating point is on either end of the load line

Question Number : 103 Question Id : 8946582707 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 voltage waveform in CE amplifier is _____ with input voltage wave form.

Options :

1. ✖ in phase
2. ✔ out of phase by 180°
3. ✖ out of phase by 90°
4. ✖ out of phase by 270°

Question Number : 104 Question Id : 8946582708 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 radio-frequency signal contains three frequencies as 870 kHz, 875 kHz and 880 kHz. These signals need to be amplified. The amplifier used should be _____.

Options :

1. ✖ audio-frequency amplifier
2. ✖ wide-band amplifier
3. ✔ tuned voltage amplifier

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Question Number : 105 Question Id : 8946582709 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 voltage gain of an amplifier is 100. On applying negative feedback with $\beta = 0.03$, its gain will reduce to _____.

Options :

- 1. ✖ 3
- 2. ✖ 33.33
- 3. ✖ 99.97
- 4. ✔ 25

Question Number : 106 Question Id : 8946582710 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 relationship between sweep error (e_s), displacement error (e_d) and transmission error (e_t) in sweep circuit is _____.

Options :

- 1. ✔ $e_s = 2e_t = 8e_d$
- 2. ✖ $e_s = e_t = e_d$
- 3. ✖ $2e_s = 2e_t = 4e_d$
- 4. ✖ $2e_s = 2e_t = e_d$

Question Number : 107 Question Id : 8946582711 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 figure of merit for the diode clipper is _____.

Options :

1. ✖ R_f/R_r
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2. ✔ R_r/R_f

3. ✖ $R_f + R_r$

4. ✖ $R_r - R_f$

Question Number : 108 Question Id : 8946582712 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 UJT is _____.

Options :

1. ✔ current controlled negative resistance device

2. ✖ voltage controlled negative resistance device

3. ✖ current controlled current source

4. ✖ voltage controlled current source

Question Number : 109 Question Id : 8946582713 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 for mobility of the electron is _____

Options :

1. ✔ Square meter per volt-second

2. ✖ Volt per meter-ohm

3. ✖ Ohm-meter per volt

4. ✖ Volt per ohm-meter

Question Number : 110 Question Id : 8946582714 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 component responsible for the fall of gain of an RC-coupled amplifier in low-frequency range is <https://previouspaper.in>_____.

Options :

1. ✖ stray shunt capacitance
2. ✖ the active device itself
3. ✔ coupling capacitor
4. ✖ load resistor

Question Number : 111 Question Id : 8946582715 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 network consisting of linear resistors and ideal voltage sources, if the value of resistors are doubled, then voltage across each resistor_____.

Options :

1. ✖ increases four times
2. ✔ remains unchanged
3. ✖ doubled
4. ✖ halved

Question Number : 112 Question Id : 8946582716 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 current, if a 20 coulomb charge passes from a point in 0.25 seconds_____

Options :

1. ✖ 10 A
2. ✖ 20 A
3. ✖ 2 A

4. ✓ 80 A

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Question Number : 113 Question Id : 8946582717 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 network is said to be reciprocal, if it satisfies the condition _____

Options :

1. ✗ $Z_{11} = Z_{22}$

2. ✓ $Z_{12} = Z_{21}$

3. ✗ $Z_{11} = Z_{12} = 0$

4. ✗ $Y_{11} = Y_{22}$

Question Number : 114 Question Id : 8946582718 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Q factor of a coil in series resonance is _____.

Options :

1. ✗ $1/\omega_0 RL$

2. ✗ $\omega_0 R/L$

3. ✗ $\omega_0 RL$

4. ✓ $\omega_0 L/R$

Question Number : 115 Question Id : 8946582719 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 both roots of second order differential equation for a series RLC circuit are real and equal, then the oscillations are _____.

Options :

1. ✗ un damped

2. ✗ under damped

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3. ✖ over damped
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4. ✔ critically damped

Question Number : 116 Question Id : 8946582720 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 imaginary part of the complex frequency is called as a/an _____.

Options :

1. ✖ angular frequency

2. ✖ sampling frequency

3. ✖ neper frequency

4. ✔ radian frequency

Question Number : 117 Question Id : 8946582721 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 number of branches incident at the node of a graph is called as the _____.

Options :

1. ✔ degree of the node

2. ✖ order of the node

3. ✖ status of the node

4. ✖ number of the node

Question Number : 118 Question Id : 8946582722 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 resistors of star connected system are R_1 , R_2 , R_3 , then the resistance between 2 and 3 in delta connected system will be _____.

Options :

1. ✖ $(R_1R_2 + R_2R_3 + R_3R_1)/R_3$

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2. ✖ $(R_1R_2 + R_2R_3 + R_3R_1)/R_2$
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3. ✔ $(R_1R_2 + R_2R_3 + R_3R_1)/R_1$

4. ✖ $(R_1R_2 + R_2R_3 + R_3R_1)/(R_3 + R_2)$

Question Number : 119 Question Id : 8946582723 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 matrix formed by link branches of a tie set matrix is _____.

Options :

1. ✖ Row matrix

2. ✖ Column matrix

3. ✖ Diagonal matrix

4. ✔ Identity matrix

Question Number : 120 Question Id : 8946582724 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 range of phase variation for reflection coefficient in the transmission lines?

Options :

1. ✖ 0° to 90°

2. ✖ 90° to 150°

3. ✔ 0° to 180°

4. ✖ 90° to 360°

Question Number : 121 Question Id : 8946582725 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Resistances can be measured with the help of _____

Options :

1. ✖ voltmeters
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2. ✖ wattmeters
3. ✖ ammeters
4. ✔ ohmmeters and resistance bridges

Question Number : 122 Question Id : 8946582726 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Digital voltmeters can be used to measure _____

Options :

1. ✔ voltage only
2. ✖ voltage, current and resistance
3. ✖ voltage and current
4. ✖ voltage and resistance

Question Number : 123 Question Id : 8946582727 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 SYNC control in CRO is used to _____

Options :

1. ✖ change the brightness of the beam
2. ✖ change the contrast of the beam CRO
3. ✔ lock the input signal being viewed
4. ✖ adjust the range of frequency

Question Number : 124 Question Id : 8946582728 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 units is used to express sensitivity of an analog voltmeter?
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Options :

1. ✖ ohms
2. ✖ voltage
3. ✖ no unit
4. ✔ ohms per volt

Question Number : 125 Question Id : 8946582729 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Basic building blocks of digital multimeter are _____

Options :

1. ✖ Oscillator and amplifier
2. ✖ Diode and Op-Amp
3. ✖ Rectifier and Schmitt trigger
4. ✔ ADC, attenuator and counter

Question Number : 126 Question Id : 8946582730 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 effect of heat on the resistances in a Wheatstone bridge?

Options :

1. ✖ no effect
2. ✖ increases the voltage drop across the circuit
3. ✖ decreases the current flowing through the circuit
4. ✔ causes a permanent change in the resistance values

Question Number : 127 Question Id : 8946582731 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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Which of the following measurement instruments does not have eddy current damping?

Options :

1. ✓ repulsion type instrument
2. ✓ true RMS volt meter
3. ✓ moving iron instrument
4. ✗ moving coil instrument

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.

Question Number : 128 Question Id : 8946582732 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 error of an instrument is normally given as a percentage of _____.

Options :

1. ✓ full – scale value
2. ✗ measured value
3. ✗ mean value
4. ✗ RMS value

Question Number : 129 Question Id : 8946582733 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 an LC oscillator?

Options :

1. ✗ Hartley Oscillator
2. ✗ Colpitts oscillator
3. ✓ Crystal oscillator
4. ✗ Clapp oscillator

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Question Number : 130 Question Id : 8946582734 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 practical Q meter consists of _____

Options :

1. ✘ Wien bridge oscillator
2. ✘ AF oscillator
3. ✔ RF oscillator
4. ✘ Crystal oscillator

Question Number : 131 Question Id : 8946582735 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 a basic data type in C language?

Options :

1. ✘ float
2. ✘ int
3. ✔ real
4. ✘ char

Question Number : 132 Question Id : 8946582736 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 program written by the programmer in high level language is called _____

Options :

1. ✘ object Program
2. ✔ source Program
3. ✘ assembled Program
4. ✘ compiled Program

Question Number : 133 Question Id : 8946582737 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 these values is not valid as an AUTO_INCREMENT value?

Options :

1. ✓ 0

2. ✗ 1

3. ✗ 2

4. ✗ 3

Question Number : 134 Question Id : 8946582738 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 function definition will run correctly?

Options :

int sum(int a, int b)

1. ✗ return (a+b)

int sum(int a, int b)

2. ✓ {return (a + b);}

int sum(a, b)

3. ✗ return (a + b);

int (real a, real b)

4. ✗ return (a + b);

Question Number : 135 Question Id : 8946582739 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 obtained in the function is given back to main by using _____ keyword.

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Options :

1. ☒ return
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2. ☐ static

3. ☐ new

4. ☐ volatile

Question Number : 136 Question Id : 8946582740 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 concepts make extensive use of arrays?

Options :

1. ☐ binary trees

2. ☐ scheduling of processes

3. ☐ caching

4. ☒ spatial locality

Question Number : 137 Question Id : 8946582741 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 C, if you pass an array as an argument to a function, what does actually get passed?

Options :

1. ☐ value of elements in array

2. ☐ first element of the array

3. ☒ base address of the array

4. ☐ address of the last element of array

Question Number : 138 Question Id : 8946582742 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 cathode of an SCR is made positive with respect to the anode and gate current is not applied, then _____.

Options :

1. ✗ all the junctions are reverse biased
2. ✗ all the junctions are forward biased
3. ✓ only the middle junction is forward biased
4. ✗ only the middle junction is reverse biased

Question Number : 139 Question Id : 8946582743 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 power transistor, _____ is the controlled parameter.

Options :

1. ✗ V_{BE}
2. ✗ V_{CE}
3. ✗ I_B
4. ✓ I_C

Question Number : 140 Question Id : 8946582744 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 power rating of a BJT is determined by which of the following ?

Options :

1. ✓ collector base area
2. ✗ base width
3. ✗ heat sink
4. ✗ emitter base junction area

Question Number : 141 Question Id : 8946582745 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 single phase induction motor the net torque experienced by the rotor at starting is ____.

Options :

1. ✗ high
2. ✗ low
3. ✗ average
4. ✓ zero

Question Number : 142 Question Id : 8946582746 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 are the names of the windings used in the split phase starting?

Options :

1. ✗ main winding and running winding
2. ✗ auxiliary windings
3. ✓ main winding and starting winding
4. ✗ starting and auxiliary windings

Question Number : 143 Question Id : 8946582747 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 transformer, which of the following windings has got more cross-sectional area?

Options :

1. ✓ copper winding
2. ✗ steel winding
3. ✗ aluminium winding

4. ✖ iron winding
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Question Number : 144 Question Id : 8946582748 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 capability of convention relay systems for complex operations is _____ that of the PLCs.

Options :

- 1. ✔ poorer than
- 2. ✖ better than
- 3. ✖ as good as
- 4. ✖ unpredictable as

Question Number : 145 Question Id : 8946582749 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 following statements which is not an advantage of an open loop system?

Options :

- 1. ✖ simplicity in construction and design
- 2. ✖ easy maintenance
- 3. ✖ rare problems of stability
- 4. ✔ recalibration from time to time

Question Number : 146 Question Id : 8946582750 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Find the efficiency η of ordinary AM for 50 percent modulation?

Options :

- 1. ✖ 33.3%

2. ✓ 12.5%
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3. ✗ 22.2%

4. ✗ 66.6%

Question Number : 147 Question Id : 8946582751 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 antennas is used for TV transmission?

Options :

1. ✗ Helical antenna

2. ✗ Yagi-uda antenna

3. ✓ Turnstile antenna

4. ✗ Loop antenna

Question Number : 148 Question Id : 8946582752 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 product of rise time and 3-dB bandwidth of the low-pass RC filter is _____

Options :

1. ✓ 0.35

2. ✗ 0.707

3. ✗ 22.7

4. ✗ 1

Question Number : 149 Question Id : 8946582753 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Find the instantaneous frequency in hertz for the given signal $10 \cos \left(200\pi t + \frac{\pi}{3} \right)$?

Options :

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1. ✖ 200 Hz
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2. ✖ 200π Hz

3. ✖ 2000 Hz

4. ✔ 100 Hz

Question Number : 150 Question Id : 8946582754 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 an angle-modulated signal

$$S(t) = 10 \cos[(10^8)\pi t + 5 \sin 2\pi(10^3)t]$$

Find the maximum frequency deviation?

Options :

1. ✖ 10 kHz

2. ✔ 5 kHz

3. ✖ 50 MHz

4. ✖ 1 kHz

Question Number : 151 Question Id : 8946582755 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 carrier is frequency-modulated with a sinusoidal signal of 2 kHz, resulting in a maximum frequency deviation of 5 kHz. Find the bandwidth of the modulated signal?

Options :

1. ✔ 14 kHz

2. ✖ 10 kHz

3. ✖ 3 kHz

4. ✖ 7 kHz
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Question Number : 152 Question Id : 8946582756 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Find the Nyquist sampling rate for the given signal $5 \cos(1000\pi t) \cos(4000\pi t)$?

Options :

- 1. ✖ 2 kHz
- 2. ✖ 500 Hz
- 3. ✖ 2.5 kHz
- 4. ✔ 5 kHz

Question Number : 153 Question Id : 8946582757 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Two analog signals $m_1(t)$ and $m_2(t)$ are to be transmitted over a common channel by means of time-division multiplexing. The highest frequency of $m_1(t)$ is 4 kHz and that of $m_2(t)$ is 4.5 kHz. What is the minimum value of the permissible sampling rate?

Options :

- 1. ✖ 4000 samples/s
- 2. ✖ 4500 samples/s
- 3. ✖ 8000 samples/s
- 4. ✔ 9000 samples/s

Question Number : 154 Question Id : 8946582758 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 function of the quartz delay line in an MTI radar is to _____

Options :

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1. ✖ delay a sweep so that the next sweep can be subtracted from it
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2. ✖ match the phase of the coho and the output oscillator
3. ✖ match the phase of the coho and the stalo
4. ✔ help in subtracting a complete scan from the previous scan

Question Number : 155 Question Id : 8946582759 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 IF bandwidth of a radar receiver is inversely proportional to the _____

Options :

1. ✖ pulse interval
2. ✖ square root of the peak transmitted power
3. ✔ pulse width
4. ✖ pulse repetition frequency

Question Number : 156 Question Id : 8946582760 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

To separate channels in an FDM receiver, it is necessary to use _____

Options :

1. ✖ differentiation
2. ✖ AND gate
3. ✖ integration
4. ✔ band pass filters

Question Number : 157 Question Id : 8946582761 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 super heterodyne receiver with an IF of 450 kHz is tuned to a signal at 1000 kHz. The image frequency is _____ .

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Options :

1. ✗ 1000 kHz
2. ✗ 450 kHz
3. ✓ 1900 kHz
4. ✗ 1550 kHz

Question Number : 158 Question Id : 8946582762 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 an 8-level encoding scheme is used in a 10 kHz bandwidth system, then the channel capacity is _____ bits/s.

Options :

1. ✓ 60,000
2. ✗ 30,000
3. ✗ 80,000
4. ✗ 20,000

Question Number : 159 Question Id : 8946582763 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 most popular satellite frequency range is 4 to 6 GHz and is called the _____ band.

Options :

1. ✗ Ku
2. ✗ X
3. ✓ C

Question Number : 160 Question Id : 8946582764 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 circular orbit around the equator with a 24-h period is called as a/an _____.

Options :

1. ✖ elliptical orbit
2. ✔ geostationary orbit
3. ✖ polar orbit
4. ✖ transfer orbit

Question Number : 161 Question Id : 8946582765 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 acronym VCO means _____

Options :

1. ✖ variable crystal oscillator
2. ✖ variable capacitor oscillator
3. ✖ voltage constant oscillator
4. ✔ voltage controlled oscillator

Question Number : 162 Question Id : 8946582766 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Given the single-tone FM signal: $S(t) = 20 \cos[(2\pi 10^6 t) + 2 \sin(2\pi 10^4 t)]$.

What is the bandwidth using Carson's rule?

Options :

1. ✖ 20 kHz

2. ✓ 60 kHz
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3. ✗ 40 kHz

4. ✗ 10 kHz

Question Number : 163 Question Id : 8946582767 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Given the angle-modulated signal: $10 \cos[\omega_c t + 2 \sin(2000\pi t)]$. Find the average transmitted power?

Options :

1. ✗ 100 W

2. ✗ 20 W

3. ✓ 50 W

4. ✗ 10 W

Question Number : 164 Question Id : 8946582768 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 horizontal radiation pattern of a dipole is a _____

Options :

1. ✗ clover leaf

2. ✗ narrow beam

3. ✓ figure eight

4. ✗ circle

Question Number : 165 Question Id : 8946582769 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

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During an eclipse, the satellite is powered by _____
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Options :

1. ☒ batteries
2. ☐ solar panels
3. ☐ jet engine
4. ☐ motors

Question Number : 166 Question Id : 8946582770 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 $(292)_{10} = (204)_b$, then the possible base b is _____

Options :

1. ☐ 8
2. ☒ 12
3. ☐ 14
4. ☐ 16

Question Number : 167 Question Id : 8946582771 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

De Morgan's theorem states that _____

Options :

1. ☒ $\overline{A + B} = \bar{A} \cdot \bar{B}$ and $\overline{AB} = \bar{A} + \bar{B}$
2. ☐ $\overline{A + B} = \bar{A} + \bar{B}$ and $\overline{AB} = \bar{A} \bar{B}$
3. ☐ $\overline{A + B} = A + B$ and $\overline{AB} = AB$
4. ☐ $\overline{A + B} = \bar{A} \bar{B}$ and $\overline{AB} = \bar{A} \bar{B}$

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Question Number : 168 Question Id : 8946582772 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 full-adders are required to construct an N-bit parallel adder?

Options :

1. ✖ $N/2$

2. ✖ $N-1$

3. ✔ N

4. ✖ $N+1$

Question Number : 169 Question Id : 8946582773 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 number of 2-to-4 line decoders required to construct a 3-to-8 line decoder is _____.

Options :

1. ✖ 1

2. ✔ 2

3. ✖ 3

4. ✖ 4

Question Number : 170 Question Id : 8946582774 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 minimum number of NAND gates required to realize an XOR gate?

Options :

1. ✖ 3

2. ✔ 4

3. ✖ 5

Question Number : 171 Question Id : 8946582775 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 race around condition occurs in a J-K flip-flop when _____.

Options :

- 1. ✖ both inputs are 0
- 2. ✖ the inputs are complementary
- 3. ✔ both inputs are 1
- 4. ✖ both inputs are high impedance

Question Number : 172 Question Id : 8946582776 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 minimum number of flip-flops required for a Mod-12 ripple counter is _____.

Options :

- 1. ✖ 3
- 2. ✔ 4
- 3. ✖ 6
- 4. ✖ 12

Question Number : 173 Question Id : 8946582777 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 logic family which consumes least power is _____.

Options :

- 1. ✖ TTL
- 2. ✖ ECL

3. ✓ CMOS
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4. ✗ IIL

Question Number : 174 Question Id : 8946582778 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 non-volatile memory is _____.

Options :

1. ✗ RAM

2. ✗ DRAM

3. ✗ Cache memory

4. ✓ ROM

Question Number : 175 Question Id : 8946582779 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 ADC used in digital voltmeters and multimeters is _____.

Options :

1. ✗ counter – type

2. ✗ flash type

3. ✓ successive–approximation type

4. ✓ dual-slope type

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.

Question Number : 176 Question Id : 8946582780 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 addressing capacity of an 8085 microprocessor is _____.

Options :

1. ✓ 64 KB

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2. ✖ 32 KB
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3. ✖ 64 MB

4. ✖ 64 Bytes

Question Number : 177 Question Id : 8946582781 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 Priority order of 8085 interrupts are _____.

Options :

1. ✖ RST 5.5, RST 6.5, RST 7.5

2. ✔ RST 7.5, RST6.5, RST5.5

3. ✖ RST6.5, RST 7.5, RST 5.5

4. ✖ RST 7.5,RST 5.5,RST6.5

Question Number : 178 Question Id : 8946582782 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 LXI H, 8054H

LXI B,1276H

DAD B

HLT

What is the result of execution of above piece of code?

Options :

1. ✖ HL = 92BA

2. ✔ BC = 92CA

3. ✖ HL = 9330
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4. ✖ BC = 9330

Question Number : 179 Question Id : 8946582783 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 BSR mode control word of 8255 is used _____.

Options :

- 1. ✖ to set port C bits
- 2. ✖ to reset port C bits
- 3. ✔ to set and reset port C bits
- 4. ✖ to set or reset port A bit

Question Number : 180 Question Id : 8946582784 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

RS-232 standard is related to _____.

Options :

- 1. ✔ serial communication
- 2. ✖ parallel communication
- 3. ✖ interrupts
- 4. ✖ memory

Question Number : 181 Question Id : 8946582785 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 8051 microcontroller Architecture is _____.

Options :

- 1. ✖ Von Neumann

2. ✖ Princeton
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3. ✔ Harvard

4. ✖ Super scalar

Question Number : 182 Question Id : 8946582786 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

One machine cycle of 8051 takes _____.

Options :

1. ✔ 12 clock cycles

2. ✖ 6 clock cycles

3. ✖ 4 clock cycles

4. ✖ 20 clock cycles

Question Number : 183 Question Id : 8946582787 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 modes of operations are there for ports in 8255 PPI?

Options :

1. ✖ 1

2. ✖ 2

3. ✔ 3

4. ✖ 4

Question Number : 184 Question Id : 8946582788 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 used to program and control the operation of IC 8259?

Options :

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1. ✖ WR <https://previouspaper.in>

2. ✔ IMR

3. ✖ INT

4. ✖ RXD

Question Number : 185 Question Id : 8946582789 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

PIC 16F877 on chip program memory size is _____.

Options :

1. ✔ 8Kx14 flash type

2. ✖ 8Kx14 EPROM type

3. ✖ 8Kx8 Flash type

4. ✖ 8Kx8 EPROM

Question Number : 186 Question Id : 8946582790 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 625-B monochrome TV system, the number of scanning lines per field is _____.

Options :

1. ✖ 625

2. ✔ 312.5

3. ✖ 311.5

4. ✖ 300

Question Number : 187 Question Id : 8946582791 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

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In 525 American monochrome TV system, the duration of front porch is _____.
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Options :

1. ✓ $1.27\mu\text{s}$
2. ✗ $4.7\mu\text{s}$
3. ✗ $5.7\mu\text{s}$
4. ✗ $2.0\mu\text{s}$

Question Number : 188 Question Id : 8946582792 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 NTSC color TV system, the I and Q signals differ in phase by_____.

Options :

1. ✗ 0°
2. ✓ 90°
3. ✗ 180°
4. ✗ 270°

Question Number : 189 Question Id : 8946582793 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 PAL color TV system, on modulation, the color difference signals are allowed with
a bandwidth of _____.

Options :

1. ✗ 0.5 MHz
2. ✗ 1 MHz
3. ✓ 1.3 MHz

4. ✖ 1.6 MHz
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Question Number : 190 Question Id : 8946582794 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 SECAM color TV system, which modulation is used to encode chrominance signal?

Options :

- 1. ✖ amplitude
- 2. ✖ angle
- 3. ✔ frequency
- 4. ✖ pulse

Question Number : 191 Question Id : 8946582795 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 asynchronous serial communication, the physical layer provides_____.

Options :

- 1. ✔ start and stop signalling
- 2. ✖ congestion control
- 3. ✖ error control
- 4. ✖ connection control

Question Number : 192 Question Id : 8946582796 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Wireless transmission can be done via_____.

Options :

- 1. ✔ radio waves
- 2. ✖ coaxial cables

3. ✖ twister pair
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4. ✖ optical fibre

Question Number : 193 Question Id : 8946582797 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Bluetooth is the wireless technology for_____.

Options :

1. ✖ local area network

2. ✔ personal area network

3. ✖ metropolitan area network

4. ✖ wide area network

Question Number : 194 Question Id : 8946582798 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 allows the client to update his/her DNS entry as his/her IP address changes?

Options :

1. ✔ dynamic DNS

2. ✖ mail transfer agent

3. ✖ authoritative name server

4. ✖ SMTP

Question Number : 195 Question Id : 8946582799 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 multiple access technique is used by IEEE 802.11 standard for wireless LAN?

Options :

1. ✖ CDMA
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2. ✔ CSMA/CA

3. ✖ ALOHA

4. ✖ GSM

Question Number : 196 Question Id : 8946582800 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 proxy server keeps copies of responses to _____.

Options :

1. ✖ current requests

2. ✔ recent requests

3. ✖ pending requests

4. ✖ received requests

Question Number : 197 Question Id : 8946582801 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 OSI layers are covered in the X.25 standard?

Options :

1. ✔ three

2. ✖ four

3. ✖ Two

4. ✖ seven

Question Number : 198 Question Id : 8946582802 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0
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Bank's ATM facility is an example of _____.

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Options :

1. ✖ LAN
2. ✔ WAN
3. ✖ Mixed networking
4. ✖ Multipurpose networking

Question Number : 199 Question Id : 8946582803 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Frames from one LAN can be transmitted to another LAN via the device _____.

Options :

1. ✖ router
2. ✔ bridge
3. ✖ repeater
4. ✖ modem

Question Number : 200 Question Id : 8946582804 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 router cannot route a datagram, datagram is discarded and sends a message to source i.e., _____.

Options :

1. ✔ destination unreachable
2. ✖ destination unverified
3. ✖ destination unavailable

4. ✖ destination no-entry
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