Telangana State Council Higher Education

Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name:	Electronics and Communication Engineering 11th May 2019 Shift1
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Magnifying Glass Required?:	No
Ruler Required?:	No
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Electronics and Communication Engineering

Group Number :	1
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Group Maximum Duration :	0
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Revisit allowed for view? :	No
Revisit allowed for edit? :	No
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 = $ ____.

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

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 $\dfrac{x^2 + 1}{(x^2 + 4)(x - 2)}$ is equal to _____

Options :

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

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

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

3. ✔

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

4. ✘

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. ✘ $\dfrac{1-2ac}{2c+abc+1}$

2. ✘ $\dfrac{1-2ac}{2c-abc-1}$

3. ✘ $\dfrac{1+2ac}{2c-abc-1}$

4. ✔ $\dfrac{1+2ac}{2c+abc+1}$

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

$$\cos\frac{2\pi}{7} + \cos\frac{4\pi}{7} + \cos\frac{6\pi}{7} = \underline{\quad}.$$

Options :

1. ✘ 1

2. ✘ $\dfrac{1}{2}$

3. ✔ $\dfrac{-1}{2}$

4. ✖ 0

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 $\dfrac{a}{c}\sin 2C + \dfrac{c}{a}\sin 2A$ is __.

Options :

1. ✔ $\sqrt{3}$

2. ✖ $\dfrac{\sqrt{3}}{2}$

3. ✖ 1

4. ✖ $\dfrac{1}{2}$

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

Options :

1. ✔ $\dfrac{7}{24}$

2. ✖ $\dfrac{24}{7}$

3. ✖ $\dfrac{3}{4}$

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 $\sin(x° + 28°) = \cos(3x° - 78°)$ and $0° < x° < 90°$, 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 $x = \tan\left(\text{Cosec}^{-1}\dfrac{65}{63}\right)$ and $y = \sec^2\left(Cot^{-1}\dfrac{1}{2}\right) + \cos ec^2\left(Tan^{-1}\dfrac{1}{3}\right)$, then $(x, y) = $ _____.

Options :

1. ✔ $\left(\dfrac{63}{16}, 15\right)$

2. ✖ $\left(\dfrac{16}{63}, 15\right)$

3. ✖ $\left(\dfrac{63}{16}, 5\right)$

4. ✖ $\left(\dfrac{16}{63}, 5\right)$

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 $\text{Tan}^{-1}\left(\dfrac{x+1}{x-1}\right) + T\text{an}^{-1}\left(\dfrac{x-1}{x}\right) = T\text{an}^{-1}(-7)$ 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 $\dfrac{1}{a+c} + \dfrac{1}{b+c} = \dfrac{3}{a+b+c}$, 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 $\sin hx = 3$ 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 : 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. ✖ $\dfrac{z_1}{z_2} = \dfrac{z_1 \bar{z}_2}{\left|z_2\right|^2}$

2. ✖ $\left|z_1 + z_2\right| \leq \left|z_1\right| + \left|z_2\right|$

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

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

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 $z = \dfrac{\sqrt{3}}{2} + i\dfrac{1}{2}$, then z^4 is _____.

Options :

1. ✖ $2\sqrt{2} + 2i$

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

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

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

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 $a+b+c=$ ——.

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 _____.

Options :

1. ✔ 14 cm

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. ✘ $\dfrac{x-2019}{e^x}$

2. ✘ $\dfrac{2019-x}{e^x}$

3. ✘ $\dfrac{x-2020}{e^x}$

4. ✔ $\dfrac{2020-x}{e^x}$

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

Options :

1. ✔ $c^2 \dfrac{\partial^2 z}{\partial x^2}$

2. ✗ $-c^2 \dfrac{\partial^2 z}{\partial x^2}$

3. ✗ $\dfrac{1}{c^2} \dfrac{\partial^2 z}{\partial x^2}$

4. ✗ $-\dfrac{1}{c^2} \dfrac{\partial^2 z}{\partial x^2}$

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 $U = \dfrac{f(\theta)}{r}$ then $x\dfrac{\partial U}{\partial x} + y\dfrac{\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. ✗ $\dfrac{1}{3}$

4. ✖ $\dfrac{1}{75}$

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

$\lim\limits_{x \to \infty} x \left(\log\left(1 + \dfrac{x}{2}\right) - \log\left(\dfrac{x}{2}\right) \right) =$ _____.

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 $\dfrac{df}{dt}$ at $t = 0$ is _____.

Options :

1. ✖ 2

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 $5050 \times \dfrac{\int_0^1 (1-(1-x)^{50})^{100} x^{49} dx}{\int_0^1 (1-x^{50})^{101} x^{49} dx}$?

Options :

1. ✔ 5100

2. ✖ 1

3. ✖ 5050

4. ✖ $\dfrac{1}{2}$

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

$\int_0^1 \max\left\{x, \dfrac{1}{2} - x\right\} dx = \underline{\qquad}$.

Options :

1. ✖ 0

2. ✖ $\dfrac{1}{2}$

3. ✔ $\dfrac{9}{16}$

4. ✖ $\dfrac{9}{8}$

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

$$\lim_{n \to \infty} \frac{1}{n^6} \sum\nolimits_{k=1}^{n} k^5 = \underline{\hspace{2cm}}.$$

Options :

1. ✔ $\dfrac{1}{6}$

2. ✖ $\dfrac{1}{5}$

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. ✔ $\dfrac{22}{7} - \pi$

3. ✖ $\dfrac{2}{105}$

4. ✖ $\dfrac{71}{15} - \dfrac{3\pi}{4}$

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 _____.

Options :

1. ✖ 1

2. ✖ $\dfrac{8}{19}$

3. ✖ $\dfrac{35}{4}$

4. ✔ $\dfrac{27}{6}$

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. ✖ $\dfrac{96}{5}$

2. ✔ $\dfrac{96\pi}{5}$

3. ✖ $\dfrac{32\pi}{5}$

4. ✖ $\dfrac{32}{5}$

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. ✔ $\dfrac{\pi^2}{32}$

2. ✖ $\dfrac{\pi}{32}$

3. ✖ $\dfrac{\pi^2}{16}$

4. ✖ $\dfrac{\pi}{16}$

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. ✖ $\dfrac{20}{3}$

3. ✔ $\dfrac{5}{3}$

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

Options :

1. ✔ infinitely many solutions

2. ✖ no solution

3. ✖ a unique solution

4. ✖ exactly two solutions

Question Number : 36 Question Id : 8946582640 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 $(a\,xy^3 + y\cos x)dx + (x^2y^2 + b\sin x)dy = 0$ is an exact

differential equation for _____.

Options :

1. ✖ $a = 1,\ b = \dfrac{3}{2}$

2. ✖ $a = \dfrac{3}{2},\ b = 1$

3. ✔ $a = \dfrac{2}{3},\ b = 1$

4. ✖ $a = 1,\ b = \dfrac{2}{3}$

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 $\dfrac{d^4y}{dx^4} + 2\dfrac{d^3y}{dx^3} + 6\dfrac{d^2y}{dx^2} + 2\dfrac{dy}{dx} + 5y = 0$,

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 $D \equiv \dfrac{d}{dx}$, then $\dfrac{1}{D^2 - 4D + 13}(6e^{2x} \sin 3x)$ 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 $\left(\dfrac{e^{-2\sqrt{x}}}{\sqrt{x}} - \dfrac{y}{\sqrt{x}} \right) \dfrac{dx}{dy} = 1$ 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 $\dfrac{dy}{dx} + y = x$, $x \in \mathbb{R}$ and $y(-1) = 0$.

Then, y(1) is equal to _____.

Options :

1. ✖ $\dfrac{2}{e} - \dfrac{2}{e^2}$

2. ✔ $2e^{-2}$

3. ✖ $2 - \dfrac{2}{e}$

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

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

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

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

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 $\dfrac{dy}{dx} - y = y^2(\sin x + \cos x)$ is _____.

Options :

1. ✖ $y = \dfrac{1}{ce^x - \sin x}$

2. ✖ $y = ce^{-x} - e^x \sin x$

3. ✖ $y = ce^{-x} - \sin x$

4. ✔ $y = \dfrac{1}{ce^{-x} - \sin x}$

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 $f(t) = \begin{cases} \sin t, & \text{for } 0 \le t \le \pi \\ 0, & \text{for } t > \pi \end{cases}$

is _____.

Options :

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

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

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

4. ✖ $\dfrac{e^{-\pi s}}{(1+s^2)}$ 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 $\dfrac{5}{s} - \dfrac{3e^{-3s}}{s} - \dfrac{2e^{-7s}}{s}$ is _____.

Options :

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

1. ✖

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

2. ✖

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

3. ✔

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

4. ✖

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 $F(s) = \dfrac{1}{s^3 + 2s^2 + 2s}$ Then, $\lim\limits_{x \to 0} f(x) =$

_____.

Options :

1. ✔ 0

2. ✖ 3

3. ✖ ∞

4. ✖ $\dfrac{1}{2}$

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. ✗ $\dfrac{1}{3(s-2)} + \dfrac{1}{3(s-5)}$

2. ✗ $\dfrac{8}{3(s-2)} + \dfrac{1}{s-5}$

3. ✓ $\dfrac{8}{3(s-2)} + \dfrac{1}{3(s-5)}$

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

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 $\dfrac{1}{6} Y(s) =$ _____.

Options :

1. ✓ $\left(\dfrac{1}{s^4} + \dfrac{1}{s^6} \right)$

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

3. ✗ $\left(\dfrac{1}{s^3} + \dfrac{1}{s^7} \right)$

4. ✗ $\left(\dfrac{1}{s} + \dfrac{1}{s^3} \right)$

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

Options :

1. ✖ 0

2. ✖ $\dfrac{\pi}{2x}$

3. ✖ $\dfrac{1}{x}$

4. ✔ $\dfrac{\pi}{2}$

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

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

Options :

1. ✖ $a_n = 0$, for all $n \ge 0$

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

3. ✖ $b_n \ne 0$, for all $n \ge 1$

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

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 $f(x) = x, -\pi \le x \le \pi$. The Fourier series of $f(x)$ is _____.

Options :

1. ✔ $2(\sin x - \frac{1}{2}\sin 2x + \frac{1}{3}\sin 3x - \ldots\ldots)$

2. ✖ $2(\sin x + \frac{1}{2}\sin 2x + \frac{1}{3}\sin 3x + \ldots\ldots)$

3. ✖ $2(\cos x - \frac{1}{2}\cos 2x + \frac{1}{3}\cos 3x - \ldots\ldots)$

4. ✖ $2(\cos x + \frac{1}{2}\cos 2x + \frac{1}{3}\cos 3x + \ldots\ldots)$

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. ✖ $L^3T^1M^{-3}$

Question Number : 52 Question Id : 8946582656 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 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.

Question Number : 53 Question Id : 8946582657 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 correct?

Options :

1. ✘ $j \times i = -k$

2. ✘ $k \times j = -i$

3. ✘ $i \times k = -j$

4. ✔ $k \times i = -j$

Question Number : 54 Question Id : 8946582658 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 $0.5 \, i + 0.8 \, j + c \, k$ 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 : 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

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 :

1. ✖ 50%

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

Question Number : 63 Question Id : 8946582667 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 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. $2\Pi\sqrt{b}$

3. $2\Pi/b$

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

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

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

Options :

1. ✖ green colour

2. ✖ yellow colour

3. ✔ blue end

4. ✖ red end

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 : 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

4. ✔ depends on the overtones present

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

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

	Chemistry
Section Id :	89465854
Section Number :	3
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	25
Number of Questions to be attempted:	25

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 AB_2

4. ✘ Ionic AB_2

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 S_8, S_2F_2, H_2S 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 : 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 :

1. ✗ 0.1 M

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^+

Question Number : 83 Question Id : 8946582687 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 : 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. ✔ $\Omega\,m$

3. ✖ Ω/m

4. ✖ $\Omega\,m^2$

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. ✔ $Fe_2O_3.\ nH_2O$

4. ✖ $Fe_3O_3.\ xH_2O$

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

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. ✖ $Ca(NO_3)_2$ and $Mg(NO_3)_2$

3. ✖ $CaSO_4$ and $MgSO_4$

4. ✔ $Ca(HCO_3)_2$ and $Mg(HCO_3)_2$

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. ✔ $NH_3 + NH_4Cl$

2. ✖ $HCl + NH_4Cl$

3. ✖ $NaCl + NH_4Cl$

4. ✖ $KOH + NH_4Cl$

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 :

1. ✖ Terylene

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 _____.

Options :

1. ✔ CO and H_2 are combustible gases and CO_2 and N_2 are non-combustible gases

2. ✘ CO + CO_2 are combustible gases and H_2O and N_2 non-combustible gases

3. ✘ CO + N_2 are combustible gases and H_2O and H_2 are non-combustible gases

4. ✘ $N_2 + H_2$ are combustible gases and CO + H_2O 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

Minamata disease is caused due to the presence of _____.

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

Correct Marks : 1 Wrong Marks : 0

The signal handling capacity of an amplifier is high if_____

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 180^0

3. ✖ out of phase by 90^0

4. ✖ out of phase by 270^0

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

4. ✖ push-pull amplifier

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

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_____.

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

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. ✗ $Z_{11} = Z1_2 = 0$

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. ✗ $1/w_0RL$

2. ✗ w_0R/L

3. ✗ w_0RL

4. ✔ w_0L/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

3. ✖ over damped

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 R1, R2, R3, then the resistance

between 2 and 3 in delta connected system will be _____.

Options :

1. ✖ (R1R2+ R2R3+ R3R1)/R3

2. ✖ (R1R2+ R2R3+ R3R1)/R2

3. ✔ (R1R2+ R2R3+ R3R1)/R1

4. ✖ (R1R2+ R2R3+ R3R1)/(R3+R2)

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

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?

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

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

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.

Options :

1. ✔ return

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

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%

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 :

1. ✘ 200 Hz

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

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 m1(t) and m2(t) are to be transmitted over a common channel by means of time-division multiplexing. The highest frequency of m1(t) is 4 kHz and that of m2(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 :

1. ✖ delay a sweep so that the next sweep can be subtracted from it

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 _____ .

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

4. ✖ S

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

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

During an eclipse, the satellite is powered by _____

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. ✘ $\overline{A + B} = \overline{AB}$ and $\overline{AB} = \bar{A}\,\bar{B}$

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

4. ✖ 6

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

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

2. ✖ 32 KB

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

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

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 :

1. ✖ WR

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

In 525 American monochrome TV system, the duration of front porch is_____.

Options :

1. ✔ 1.27µs

2. ✘ 4.7µs

3. ✘ 5.7µs

4. ✘ 2.0µs

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. ✘ 0^0

2. ✔ 90^0

3. ✘ 180^0

4. ✘ 270^0

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

In SECAM color TV system, which modulation is used to encode chrominance signal?

Options :

1. ✖ amplitude

2. ✖ angle

3. ✔ frequency

4. ✖ pulse

In asynchronous serial communication, the physical layer provides_____.

Options :

1. ✔ start and stop signalling

2. ✖ congestion control

3. ✖ error control

4. ✖ connection control

Wireless transmission can be done via_____.

Options :

1. ✔ radio waves

2. ✖ coaxial cables

3. ✖ twister pair

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

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

Bank's ATM facility is an example of_____.

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

4. ✖ destination no-entry