

Andhra Pradesh State Council of 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.

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| Question Paper Name : | Electrical and Electronics Engineering 23rd Apr 2026 Shift 1 |
| Subject Name : | Electrical and Electronics Engineering |
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Electrical and Electronics Engineering

| | |
|---------------------------------|----------|
| Group Number : | 1 |
| Group Id : | 77951859 |
| Group Maximum Duration : | 0 |
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| Show Attended Group? : | No |
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| Break time : | 0 |
| Group Marks : | 200 |

Mathematics

| | |
|--------------------------------|-----------|
| Section Id : | 779518229 |
| Section Number : | 1 |
| Section type : | Online |
| Mandatory or Optional : | Mandatory |

| | |
|---------------------------------------|-----------|
| Number of Questions : | 50 |
| Number of Questions to be attempted : | 50 |
| Section Marks : | 50 |
| Section Negative Marks : | 0 |
| Maximum Instruction Time : | 0 |
| Sub-Section Number : | 1 |
| Sub-Section Id : | 779518245 |
| Question Shuffling Allowed : | Yes |

Question Number : 1 Question Id : 77951811609 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 4 & 9 \end{bmatrix}$, the minor M_{23} of the a_{23} is

Options :

1. ✘ 10

2. ✔ -10

3. ✘ -6

4. ✘ 6

Question Number : 2 Question Id : 77951811610 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $\begin{vmatrix} 2x & 5 \\ 8 & x \end{vmatrix} = \begin{vmatrix} 6 & -2 \\ 7 & 3 \end{vmatrix}$ then the value of x is

Options :

1. ✘ 3

2. ✔ ± 6

3. ✘ -3

4. ✘ ± 2

Question Number : 3 Question Id : 77951811611 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If A is a square matrix of order 3 and $|A| = 5$, then the value of $|2A^T|$ is

Options :

1. ✘ -10

2. ✘ 10

3. ✔ 40

4. ✘ -40

Question Number : 4 Question Id : 77951811612 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following systems has non trivial solution ?

Options :

1. ✘ $AX = 0, |A| = 4$

2. ✘ $AX = 0, |A| = -4$

3. ✔ $AX = 0, |A| = 0$

4. ✘ $AX = B, |B| = 5$

Question Number : 5 Question Id : 77951811613 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\begin{bmatrix} x+y & 2 \\ 1 & x-y \end{bmatrix} = \begin{bmatrix} 4 & 2 \\ 1 & 2 \end{bmatrix}$, then the values of x and y are:

Options :

1. ✓ $x = 3, y = 1$
2. ✗ $x = 1, y = 3$
3. ✗ $x = 2, y = 3$
4. ✗ $x = 1, y = 1$

Question Number : 6 Question Id : 77951811614 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $\frac{x+4}{(x+2)^2(x+3)} = \frac{A}{(x+2)^2} + \frac{B}{(x+2)} + \frac{C}{(x+3)}$ then $A + B + C =$

Options :

1. ✓ 2
2. ✗ 1
3. ✗ -1
4. ✗ 3

Question Number : 7 Question Id : 77951811615 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $\frac{x}{(x-1)^2(x+2)} = \frac{A}{(x-1)^2} + \frac{2}{9(x-1)} + \frac{B}{(x+2)}$ then $A + B =$

Options :

1. ✗ $1/3$
2. ✓

1/9

3. ✘ $-1/3$

4. ✘ $2/3$

Question Number : 8 Question Id : 77951811616 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$, then $A + B =$

Options :

1. ✘ 30°

2. ✔ 45°

3. ✘ 60°

4. ✘ 90°

Question Number : 9 Question Id : 77951811617 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $2\sin^{-1}x = \sin^{-1}k$ then $k =$

Options :

1. ✔ $2x\sqrt{1-x^2}$

2. ✘ $2x$

3. ✘ x^2

4. ✘ $1 - 2x^2$

Question Number : 10 Question Id : 77951811618 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $\sin^{-1}\frac{5}{x} + \sin^{-1}\frac{12}{x} = \frac{\pi}{2}$, then $x =$

Options :

1. ✘ 12

2. ✘ 7

3. ✔ 13

4. ✘ 15

Question Number : 11 Question Id : 77951811619 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The number of solutions of the equation $\sin 2x - \cos 2x = 2 - \sin 2x$ lying in the interval $[0, \pi]$ is

Options :

1. ✘ 0

2. ✘ 1

3. ✔ 2

4. ✘ 3

Question Number : 12 Question Id : 77951811620 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $\tan \theta + \sec \theta = \sqrt{3}$ then the principal value of θ in $[0, 2\pi]$ is

Options :

1. ✘ $\pi/4$

2. ✓ $\pi/6$

3. ✗ $\pi/2$

4. ✗ $2\pi/3$

Question Number : 13 Question Id : 77951811621 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\frac{\tan x - 1 + \sec x}{\tan x - \sec x + 1} =$$

Options :

1. ✗ $\frac{1 - \sin x}{\cos x}$

2. ✓ $\frac{1 + \sin x}{\cos x}$

3. ✗ $\frac{1 + \cos x}{\sin x}$

4. ✗ $\frac{1 - \cos x}{\sin x}$

Question Number : 14 Question Id : 77951811622 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\tan 9^\circ - \tan 27^\circ - \tan 63^\circ + \tan 81^\circ =$$

Options :

1. ✗ 2

2. ✗ 1

3. ✓ 4

4. ✘ 3

Question Number : 15 Question Id : 77951811623 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $\cos \theta = \frac{1}{2} \left(a + \frac{1}{a} \right)$, then $4\cos^3 \theta - 3\cos \theta =$

Options :

1. ✘ $a^3 + \frac{1}{a^3}$

2. ✔ $\frac{1}{2} \left(a^3 + \frac{1}{a^3} \right)$

3. ✘ $\frac{1}{4} \left(a^3 + \frac{1}{a^3} \right)$

4. ✘ $\frac{1}{3} \left(a^3 + \frac{1}{a^3} \right)$

Question Number : 16 Question Id : 77951811624 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$\cos 6^\circ \sin 24^\circ \cos 72^\circ =$

Options :

1. ✘ $1/4$

2. ✘ $-1/8$

3. ✘ $-1/4$

4. ✔ $1/8$

Question Number : 17 Question Id : 77951811625 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\tan^{-1}1 + \tan^{-1}2 + \tan^{-1}3 =$$

Options :

1. ✘ $3\pi/4$

2. ✘ $\pi/2$

3. ✔ π

4. ✘ 2π

Question Number : 18 Question Id : 77951811626 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\text{If } z_1 = 4i^{40} - 5i^{35} + 6i^{17} + 2, z_2 = -1 + i \text{ then } |z_1 + z_2| =$$

Options :

1. ✔ 13

2. ✘ 5

3. ✘ 15

4. ✘ 12

Question Number : 19 Question Id : 77951811627 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The conjugate of $(1 + i)^3$ is

Options :

1. ✘ $1 + 2i$

2. ✘ $-2 + 2i$

3. ✓ $-2 - 2i$

4. ✗ $1 - 2i$

Question Number : 20 Question Id : 77951811628 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The equation of a circle whose Centre is $(-3, 2)$ and area is 176 units is

Options :

1. ✗ $x^2 + y^2 + 6x - 4y - 36 = 0$

2. ✓ $x^2 + y^2 + 6x - 4y - 43 = 0$

3. ✗ $x^2 + y^2 - 6x + 4y - 36 = 0$

4. ✗ $x^2 + y^2 - 6x + 4y - 43 = 0$

Question Number : 21 Question Id : 77951811629 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The equation of a circle whose Centre is $(2, -1)$ and which passes through the point $(3, 6)$ is

Options :

1. ✗ $x^2 + y^2 + 4x + 2y - 45 = 0$

2. ✗ $x^2 + y^2 - 2x + 2y - 50 = 0$

3. ✗ $x^2 + y^2 + 2x + 2y - 50 = 0$

4. ✓ $x^2 + y^2 - 4x + 2y - 45 = 0$

Question Number : 22 Question Id : 77951811630 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If the parabola $y^2 = 4ax$ passes through the point (3, 2) then the length of its latus rectum is:

Options :

1. ✓ $\frac{4}{3}$

2. ✗ 4

3. ✗ $\frac{2}{3}$

4. ✗ $\frac{1}{3}$

Question Number : 23 Question Id : 77951811631 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The line $y = mx + 2$ is a tangent to the parabola $y^2 = 8x$ if

Options :

1. ✓ $m = 1$

2. ✗ $m = 2$

3. ✗ $m = 3$

4. ✗ $m = 4$

Question Number : 24 Question Id : 77951811632 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The length of the latusrectum and eccentricity of the Hyperbola $9x^2 - 16y^2 = 144$ are

Options :

1. ✘ $\left(\frac{9}{4}, \frac{5}{4}\right)$

2. ✔ $\left(\frac{9}{2}, \frac{5}{4}\right)$

3. ✘ $\left(\frac{9}{2}, \frac{5}{2}\right)$

4. ✘ $\left(9, \frac{5}{2}\right)$

Question Number : 25 Question Id : 77951811633 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The equation of the ellipse with foci at $(\pm 3, 0)$ and the eccentricity as $1/3$ is :

Options :

1. ✔ $\frac{x^2}{81} + \frac{y^2}{72} = 1$

2. ✘ $\frac{x^2}{9} + \frac{y^2}{8} = 1$

3. ✘ $\frac{x^2}{8} + \frac{y^2}{9} = 1$

4. ✘ $\frac{x^2}{3} + \frac{y^2}{2} = 1$

Question Number : 26 Question Id : 77951811634 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\lim_{x \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x =$$

Options :

1. ✘ 0

2. ✘ 1

3. ✔ e

4. ✘ ∞

Question Number : 27 Question Id : 77951811635 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\lim_{x \rightarrow 0} \frac{\sqrt{1+x} - 1}{x} =$$

Options :

1. ✘ 0

2. ✔ $1/2$

3. ✘ 1

4. ✘ ∞

Question Number : 28 Question Id : 77951811636 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\text{If } y = \frac{(a \cos x + b \sin x + C)}{\sin x} \text{ then } \frac{dy}{dx} =$$

Options :

1. ✔ $-a \operatorname{cosec}^2 x - c \operatorname{cosec} x \cot x$

2. ✘ $-a$

3. ✘ $-a \operatorname{cosec}^2 x + b \sec^2 x + c \operatorname{cosec} x \cot x$

4. ✘ $a \operatorname{cosec}^2 x - c \operatorname{cosec} x \cot x$

Question Number : 29 Question Id : 77951811637 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $y = \sqrt{x + \sqrt{x + \sqrt{x + \dots \infty}}}$ then $\frac{dy}{dx} =$

Options :

1. ✘ $\frac{1}{2y}$

2. ✘ $\frac{1}{1-2y}$

3. ✘ $\frac{1}{2(1-2y)}$

4. ✔ $\frac{-1}{1-2y}$

Question Number : 30 Question Id : 77951811638 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Slope of the tangent to the curve $y = 9x^2 + 7x^4 + 5$ at the point $x = 1$ is

Options :

1. ✘ 28

2. ✘ 16

3. ✔ 46

4. ✘ $\frac{1}{46}$

Question Number : 31 Question Id : 77951811639 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\text{If } f(x) = \begin{cases} 4(5^x) & x < 0 \\ 8k + x & x \geq 0 \end{cases} \quad \text{then } f'(-1) =$$

Options :

1. ✘ $\frac{2}{5} \log 5$

2. ✔ $\frac{4}{5} \log 5$

3. ✘ $\frac{3}{5} \log 5$

4. ✘ $20 \log 5$

Question Number : 32 Question Id : 77951811640 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\text{If } 2^x + 2^y = 2^{x+y}, \text{ then } \frac{dy}{dx} =$$

Options :

1. ✔ $1 - 2^y$

2. ✘ $1 - \frac{1}{2^y}$

3. ✘ $1 + 2^{-y}$

4. ✘ $1 + 2^y$

Question Number : 33 Question Id : 77951811641 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\text{If } y + \sin^{-1}(1 - x^2) = e^x, \text{ then } \frac{dy}{dx} =$$

Options :

1. ✘ $e^x - \frac{2}{\sqrt{2-x^2}}$

2. ✘ $e^x - \frac{2}{\sqrt{2+x^2}}$

3. ✔ $e^x + \frac{2}{\sqrt{2-x^2}}$

4. ✘ $e^x + \frac{2}{\sqrt{2+x^2}}$

Question Number : 34 Question Id : 77951811642 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $y(x) = x^x$, $x > 0$, then $y''(2) - 2y'(2) =$

Options :

1. ✘ $4 \log_e 2 - 2$

2. ✘ $4 \log_e 2 + 2$

3. ✘ $4 (\log_e 2)^2 + 2$

4. ✔ $4 (\log_e 2)^2 - 2$

Question Number : 35 Question Id : 77951811643 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $z = x^2y^3 + e^y \sin x$, then $\frac{\partial^2 z}{\partial x \partial y} =$

Options :

1. ✔ $6xy^2 + e^y \cos x$

2. ✘ $3x^2y^2 + e^y \sin x$

3. ✘ $3x^2y^2 + e^y \cos x$

4. ✘ $6xy^2 + e^y \sin x$

Question Number : 36 Question Id : 77951811644 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\int \frac{dx}{\sin^2 x \cos^2 x} =$$

Options :

1. ✘ $\tan x + \cot x + c$

2. ✔ $\tan x - \cot x + c$

3. ✘ $\tan x \cot x + c$

4. ✘ $\tan x + \sec x + c$

Question Number : 37 Question Id : 77951811645 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\int \frac{dx}{\sqrt{x+1} + \sqrt{x}} =$$

Options :

1. ✔ $\frac{2}{3} [(x+1)^{\frac{3}{2}} - (x)^{\frac{3}{2}}] + c$

2. ✘ $\frac{2}{3} [(x+1)^{\frac{3}{2}} + (x)^{\frac{3}{2}}] + c$

3. ✘ $\frac{3}{2} [(x+1)^{\frac{3}{2}} - (x)^{\frac{3}{2}}] + c$

4. ✘ $\frac{3}{2}[(x+1)^{\frac{3}{2}} + (x)^{\frac{3}{2}}] + c$

Question Number : 38 Question Id : 77951811646 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $\int \frac{\sin^3 x + \cos^3 x}{\sin^2 x \cos^2 x} dx = A \sec x + B \operatorname{cosec} x + c$, then (A, B) are

Options :

1. ✘ (1, 1)

2. ✘ (-1, -1)

3. ✔ (1, -1)

4. ✘ (-1, 1)

Question Number : 39 Question Id : 77951811647 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The integral of $f(x) = 1 + x^2 + x^4$ with respect to x^2 is

Options :

1. ✘ $x + \frac{x^3}{3} + \frac{x^5}{5} + C$

2. ✘ $\frac{x^3}{3} + \frac{x^5}{5} + C$

3. ✘ $x^2 + \frac{x^4}{4} + \frac{x^6}{6} + C$

4. ✔ $x^2 + \frac{x^4}{2} + \frac{x^6}{3} + C$

Question Number : 40 Question Id : 77951811648 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\int_0^{\frac{\pi}{2}} \frac{\sin^{100}x}{\sin^{100}x + \cos^{100}x} dx =$$

Options :

1. ✘ $\pi/2$

2. ✔ $\pi/4$

3. ✘ 100

4. ✘ 50

Question Number : 41 Question Id : 77951811649 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\int_0^1 x \sqrt{x^2 + 4} dx =$$

Options :

1. ✘ $\frac{1}{3}[5\sqrt{5} - 4]$

2. ✘ $\frac{1}{2}[5\sqrt{5} - 8]$

3. ✔ $\frac{1}{3}[5\sqrt{5} - 8]$

4. ✘ $\frac{1}{3}[5\sqrt{5} + 4]$

Question Number : 42 Question Id : 77951811650 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\int_{-\pi/6}^{\pi/6} \frac{\sin^5x \cos^3x}{x^4} dx =$$

Options :

1. ✘ $\pi/2$

2. ✘ $\pi/4$

3. ✔ 0

4. ✘ 1

Question Number : 43 Question Id : 77951811651 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$$\int \frac{dx}{\sqrt{16 - 25x^2}} =$$

Options :

1. ✔ $\frac{1}{5} \sin^{-1} \left(\frac{5x}{4} \right) + c$

2. ✘ $\sin^{-1} \left(\frac{5x}{4} \right) + c$

3. ✘ $\frac{1}{5} \sin^{-1} \left(\frac{x}{4} \right) + c$

4. ✘ $\frac{1}{5} \sin^{-1} \left(\frac{4x}{5} \right) + c$

Question Number : 44 Question Id : 77951811652 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The solution of the differential equation $x \frac{dy}{dx} + y = 0$ passing through the point (1,1) is y =

Options :

1. ✘ x^2

2. ✔ x^{-1}

3. ✘ x^{-2}

4. ✘ x

Question Number : 45 Question Id : 77951811653 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Degree of the differential equation $y = x \frac{dy}{dx} + a \sqrt{1 + \left(\frac{dy}{dx}\right)^2}$ is

Options :

1. ✘ 4

2. ✘ 3

3. ✔ 2

4. ✘ 1

Question Number : 46 Question Id : 77951811654 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The order of the differential equation of all circles passing through the origin and having their centers on the x – axis is

Options :

1. ✘ 4

2. ✘ 3

3. ✘ 2

4. ✔ 1

Question Number : 47 Question Id : 77951811655 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If a and b are arbitrary constants, then the differential equation representing the family of curves $y = a \sin(x + b)$ is

Options :

1. ✘ $\frac{d^2y}{dx^2} - y = 0$

2. ✔ $\frac{d^2y}{dx^2} + y = 0$

3. ✘ $\frac{d^2y}{dx^2} - y^2 = 0$

4. ✘ $\frac{dy}{dx} - y = 0$

Question Number : 48 Question Id : 77951811656 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The differential equation is $\frac{dy}{dx} + \frac{y}{x} = 0$ and $y(1) = 2$. Then the value of $y(3) =$

Options :

1. ✘ 2

2. ✘ 3

3. ✔ $\frac{2}{3}$

4. ✘ 1

Question Number : 49 Question Id : 77951811657 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation $\frac{dy}{dx} = e^{x-y} + x^2e^{-y}$ is

Options :

1. ✘ $e^{-y} = e^x + \frac{x^3}{3} + c$

2. ✔ $e^y = e^x + \frac{x^3}{3} + c$

3. ✘ $e^y = e^x + x^3 + c$

4. ✘ $e^y = e^x + c$

Question Number : 50 Question Id : 77951811658 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The differential equation is $\frac{dy}{dx} + y \tan x = \sec x$ and $y(0) = 1$. Then the value of $y\left(\frac{\pi}{4}\right) =$

Options :

1. ✘ 0

2. ✔ $\sqrt{2}$

3. ✘ 1

4. ✘ -1

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| Section Id : | 779518230 |
| Section Number : | 2 |
| Section type : | Online |
| Mandatory or Optional : | Mandatory |
| Number of Questions : | 25 |
| Number of Questions to be attempted : | 25 |
| Section Marks : | 25 |
| Section Negative Marks : | 0 |
| Maximum Instruction Time : | 0 |
| Sub-Section Number : | 1 |
| Sub-Section Id : | 779518246 |
| Question Shuffling Allowed : | Yes |

Question Number : 51 Question Id : 77951811659 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $P = F \cdot v \sin \beta$ where F is force and v is velocity then the dimensions of P and β are

Options :

1. ✓ $ML^2 T^{-3}, T^{-1}$

2. ✗ $ML T^{-2}, T^{-2}$

3. ✗ $ML^2 T^{-1}, T^{-1}$

4. ✗ $ML^2 T^3, T^{-2}$

Question Number : 52 Question Id : 77951811660 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If velocity V , energy E and time T are chosen as fundamental quantities then dimensional representation of surface tension in this system will be

Options :

1. ✓ $E^1 V^{-2} T^{-2}$

2. ✗ $E^1 V^{-1} T^{-2}$

3. ✘ $E^{-2} V^{-1} T^{-3}$

4. ✘ $E^1 V^{-2} T^{-1}$

Question Number : 53 Question Id : 77951811661 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $|\mathbf{A} + \mathbf{B}| = |\mathbf{A} - \mathbf{B}|$, then the angle between the two vectors \mathbf{A} and \mathbf{B} is

Options :

1. ✘ 0°

2. ✘ 180°

3. ✘ 120°

4. ✔ 90°

Question Number : 54 Question Id : 77951811662 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

An aeroplane is moving in a circular path with a speed of 450 Kmph. What is the change in velocity in half revolution?

Options :

1. ✘ 0 Kmph

2. ✘ 450 Kmph

3. ✘ 250 Kmph

4. ✔ 900 Kmph

Question Number : 55 Question Id : 77951811663 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The ratio between maximum and minimum values of two vectors \vec{A} and \vec{B} ($\vec{A} > \vec{B}$) is 1:4. Then the ratio between the magnitudes of two vectors is

Options :

1. ✘ 3:2
2. ✔ 5:3
3. ✘ 2:3
4. ✘ 3:5

**Question Number : 56 Question Id : 77951811664 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

The magnitudes of three vectors \vec{A} , \vec{B} and \vec{C} are 12, 5 and 13 units respectively and $\vec{A} + \vec{B} = \vec{C}$. The angle between \vec{A} and \vec{B} is

Options :

1. ✘ 0°
2. ✘ 120°
3. ✔ 90°
4. ✘ 45°

**Question Number : 57 Question Id : 77951811665 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

A body falling from height 'H' takes time 'T' seconds to reach the ground. The time taken to cover the second half of height is

Options :

1. ✘ $\frac{T}{\sqrt{2}}$

2. ✘ $\sqrt{2} T$

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

4. ✘ $\left(\frac{1}{\sqrt{2}-1}\right) T$

Question Number : 58 Question Id : 77951811666 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

With what speed a body be thrown upwards so that the distances covered in the 5th second and 6th second are equal?

Options :

1. ✘ 75 m/s

2. ✘ $\sqrt{98}$ m/s

3. ✔ 49 m/s

4. ✘ 19.8 m/s

Question Number : 59 Question Id : 77951811667 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A body of mass 1 kg starts moving from rest under the action of a force which varies with

displacement as $F = 2x + 5$ (in newtons). The work done by this force to displace the body from $x = 0$ to $x = 2$ m is:

Options :

1. ✘ 8 J

2. ✘ 10 J

3. ✘

12 J

4. ✓ 14 J

Question Number : 60 Question Id : 77951811668 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The potential energy of a particle is given by $U(x) = 20 + (x - 2)^2$, where U is in joules and x in meters. The minimum potential energy and the position where it occurs are:

Options :

1. ✓ 20 J at $x = 2$

2. ✗ 2 J at $x = 20$ m

3. ✗ 22 J at $x = 2$ m

4. ✗ 0 J at $x = 2$ m

Question Number : 61 Question Id : 77951811669 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Power supplied to a particle of mass 2 kg varies with time as $P = 3t^2/2$ watt, where t is in seconds. If velocity at $t = 0$ is zero, the velocity at $t = 2$ s is:

Options :

1. ✗ 1 m/s

2. ✓ 2 m/s

3. ✗ $\sqrt{2}$ m/s

4. ✗

4 m/s

Question Number : 62 Question Id : 77951811670 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A pump is used to deliver water at a certain rate from a given pipe. To obtain twice the volume of water from the same pipe in the same time, by what factor must the power of the motor pump be increased? (Assume ideal conditions, $g = 10 \text{ ms}^{-2}$)

Options :

1. ✘ 4

2. ✔ 8

3. ✘ 16

4. ✘ 32

Question Number : 63 Question Id : 77951811671 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Two identical piano wires, when tuned to a fundamental frequency of 400 Hz, produce no beats. One wire is then slightly tightened, and the beat frequency heard is 2 Hz. What is the new fundamental frequency of the tightened wire?

Options :

1. ✘ 398 Hz

2. ✔ 402 Hz

3. ✘ 404 Hz

4. ✘ 396 Hz

Question Number : 64 Question Id : 77951811672 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A source of sound of frequency 500Hz is moving towards an observer with velocity 30m/s. The speed of sound is 330m/s. The frequency heard by the observer will be:

Options :

1. ✘ 450 Hz

2. ✔ 550 Hz

3. ✘ 600 Hz

4. ✘ 500 Hz

Question Number : 65 Question Id : 77951811673 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In Acoustics, 'Noise' is generally characterized by:

Options :

1. ✔ Irregular and non-periodic vibrations.

2. ✘ A constant pitch and frequency

3. ✘ Vibrations that follow a harmonic series

4. ✘ Regular and periodic vibrations

Question Number : 66 Question Id : 77951811674 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If the volume of a room is doubled and the total absorption is halved, the reverberation time will:

Options :

1. ✘ Remain unchanged
2. ✘ Be doubled
3. ✔ Become four times
4. ✘ Be halved

Question Number : 67 Question Id : 77951811675 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

. In a closed hall of volume 5000 m^3 , the total absorption of the interior surfaces is 200 metric sabin . The reverberation time is:

Options :

1. ✘ 1 s
2. ✘ 2 s
3. ✘ 3 s
4. ✔ 4 s

Question Number : 68 Question Id : 77951811676 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In an Isothermal process

Options :

1. ✘ Internal energy of the system never remains constant
2. ✘ Total heat energy of the system remains constant

3. ✘ Volume of the system remains constant
4. ✔ Temperature of the system remains constant

Question Number : 69 Question Id : 77951811677 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the pressure of an ideal gas is doubled and its absolute temperature is halved; the volume will become:

Options :

1. ✔ 1/4 of initial volume
2. ✘ 1/2 initial volume
3. ✘ Same as initial volume
4. ✘ 2 times of initial volume

Question Number : 70 Question Id : 77951811678 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

At constant temperature, the product PV is plotted against pressure P for an ideal gas. The graph obtained is:

Options :

1. ✔ Straight line parallel to P -axis
2. ✘ Straight line with positive slope
3. ✘ Straight line through origin
4. ✘ Parabola

Question Number : 71 Question Id : 77951811679 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A bubble of an ideal gas rises from the bottom of a lake to the surface. At the bottom, the pressure is 3 Atm. and the temperature is 7 °C. At the surface, the pressure is 1 atm. and the temperature is 27°C. If the initial volume of the bubble was V_0 what is its volume V_f at the surface?

Options :

1. ✘ $3 V_0$

2. ✔ $3.21 V_0$

3. ✘ $0.9 V_0$

4. ✘ $5.4 V_0$

Question Number : 72 Question Id : 77951811680 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The R.M.S. speed of oxygen molecules at 27°C is v . At 927°C, the rms speed will be:

Options :

1. ✘ v

2. ✘ $v/2$

3. ✔ $2v$

4. ✘ $4v$

Question Number : 73 Question Id : 77951811681 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In a photoelectric experiment, the stopping potential for incident light of wavelength 4000 \AA is 2 V .

If the wavelength is changed to 3000 \AA , the new stopping potential will be approximately:

(Use $h = 4.14 \times 10^{-15} \text{ eV} \cdot \text{s}$, $c = 3 \times 10^8 \text{ m/s}$)

Options :

1. ✘ 2 V

2. ✔ 3.03 V

3. ✘ 4.14 V

4. ✘ 1.5 V

Question Number : 74 Question Id : 77951811682 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In Optical Fiber communication, the signal is transmitted in the form of:

Options :

1. ✘ Electrical pulses

2. ✔ Light pulses

3. ✘ Radio waves

4. ✘ Sound waves

Question Number : 75 Question Id : 77951811683 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In a superconducting ring, a persistent current has been flowing without decay for years. This is possible because:

Options :

1. ✔ Resistance is exactly zero and flux is quantized

2. ✘ Resistance is very small but finite
3. ✘ The ring is at absolute zero temperature
4. ✘ Magnetic field lines are expelled

Chemistry

| | |
|---------------------------------------|-----------|
| Section Id : | 779518231 |
| Section Number : | 3 |
| Section type : | Online |
| Mandatory or Optional : | Mandatory |
| Number of Questions : | 25 |
| Number of Questions to be attempted : | 25 |
| Section Marks : | 25 |
| Section Negative Marks : | 0 |
| Maximum Instruction Time : | 0 |
| Sub-Section Number : | 1 |
| Sub-Section Id : | 779518247 |
| Question Shuffling Allowed : | Yes |

Question Number : 76 Question Id : 77951811684 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The pair of orbitals with electron density maximum along the axes is

Options :

1. ✘ d_{xy}, d_{yz}
2. ✔ $d_z^2, d_{x^2-y^2}$
3. ✘ d_{xz}, d_z^2
4. ✘

d_{xz}, P_z

Question Number : 77 Question Id : 77951811685 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The angular momentum of an electron in an orbit X of hydrogen atom is $\frac{2h}{\pi}$.

Maximum number of orbitals possible in X is

Options :

1. ✘ 4

2. ✘ 9

3. ✔ 16

4. ✘ 25

Question Number : 78 Question Id : 77951811686 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The four quantum numbers for the electron in the outermost orbital of potassium ($Z=19$) are

Options :

1. ✘ $n=4, l=2, m=-1, s=+1/2$

2. ✔ $n=4, l=0, m=0, s=+1/2$

3. ✘ $n=3, l=0, m=1, s=+1/2$

4. ✘ $n=4, l=3, m=-2, s=-1/2$

Question Number : 79 Question Id : 77951811687 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In which of the following, the number of bonding electrons and non-bonding electrons are in 3:2 ratio?

Options :

1. ✓ N_2

2. ✗ O_2

3. ✗ HCl

4. ✗ F_2

Question Number : 80 Question Id : 77951811688 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which one of the following statements is not correct?

Options :

1. ✗ Ionic bond is non directional bond

2. ✗ The maximum number of bond pairs between two atoms is 3

3. ✓ Covalent compounds conduct electricity in fused state

4. ✗ Ionic compounds are generally soluble in water

Question Number : 81 Question Id : 77951811689 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

12.6 g of oxalic acid, $H_2C_2O_4 \cdot 2H_2O$ (M.wt 126) is present in 1500 mL of solution. The normality of that solution is

Options :

1. ✘ 0.266 N

2. ✔ 0.133 N

3. ✘ 0.399 N

4. ✘ 0.430 N

Question Number : 82 Question Id : 77951811690 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which of the following has highest equivalent weight?

(Given: At.wt H=1, C=12, O=16, S=32, Na=23, Ca=40)

Options :

1. ✘ Sulphuric acid

2. ✘ Sodium carbonate

3. ✔ Sodium sulphate

4. ✘ Calcium carbonate

Question Number : 83 Question Id : 77951811691 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Identify the pair of gases which have same number of molecules at S.T.P ?

Options :

1. ✘ 11 g of CO₂ and 14 g of N₂

2. ✘ 16 g of O₃ and 16 g of CH₄

3. ✓ 5 g of H₂ and 40 g of CH₄

4. ✗ 28 g of N₂ and 22 g of CO₂

Question Number : 84 Question Id : 77951811692 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

100 mL of 0.1M HCl and 100 mL of 0.05 M H₂SO₄ are mixed and the solution is diluted to 2.0 L by adding water. The pH of the resulting solution is

Options :

1. ✗ 1

2. ✗ 3

3. ✓ 2

4. ✗ 4

Question Number : 85 Question Id : 77951811693 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

According to Arrhenius theory of acids and bases, which of the following is an example of Arrhenius base?

Options :

1. ✗ H₂SO₄

2. ✗ NH₃

3. ✓ NaOH

4. ✗ CaO

Question Number : 86 Question Id : 77951811694 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Electrolysis of an aqueous solution of Na_2SO_4 between Pt electrodes liberate a gas X at anode and gas Y at cathode. X and Y respectively are

Options :

1. ✘ H_2, O_2
2. ✔ O_2, H_2
3. ✘ SO_2, H_2
4. ✘ H_2, SO_2

Question Number : 87 Question Id : 77951811695 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The wrong statement regarding Galvanic cell is

Options :

1. ✘ In this spontaneous redox reaction occurs
2. ✘ Salt bridge maintains electrical neutrality between the two solutions
3. ✔ Anode is represented by (+) and cathode by (-)
4. ✘ At anode oxidation occurs

Question Number : 88 Question Id : 77951811696 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which of the following is a weak electrolyte?

Options :

1. ✓ H_2CO_3

2. ✗ H_2SO_4

3. ✗ NaCl

4. ✗ NaOH

Question Number : 89 Question Id : 77951811697 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The exhausted anion-exchange resin is regenerated with

Options :

1. ✓ dilute NaOH solution

2. ✗ dilute NaCl solution

3. ✗ dilute HCl solution

4. ✗ dilute Na_2SO_4 solution

Question Number : 90 Question Id : 77951811698 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A sample of water is known to contain $\text{Mg}(\text{HCO}_3)_2 = 7.3 \text{ mg/L}$, $\text{Ca}(\text{HCO}_3)_2 = 8.1 \text{ mg/L}$ and 27.2 mg/L of CaSO_4 .

The total hardness associated with water sample (in ppm) in equivalents of CaCO_3 is

(At.wt H=1, C=12, O=16, Mg = 24, Ca=40, S=32)

Options :

1. ✗ 20

2. ✗

3. ✓ 30

4. ✗ 40

Question Number : 91 Question Id : 77951811699 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The type of functional group associated with cation exchange resin is

Options :

1. ✗ - OH

2. ✓ - SO₃H

3. ✗ - NH₂

4. ✗ - CHO

Question Number : 92 Question Id : 77951811700 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Identify the incorrect statement about the corrosion

Options :

1. ✗ In the composition type of galvanic cell, metal with lower standard reduction potential undergoes corrosion

2. ✗ In stress cell type of galvanic cell, corrosion occurs at the stressed area of the metal

3. ✓ The rate of corrosion is more, when the area of cathode is smaller

In concentration cell type of galvanic cell, the metal below the water level undergoes corrosion readily

4. ✘

Question Number : 93 Question Id : 77951811701 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In galvanised iron

Options :

1. ✔ Zn acts as anode and Fe acts as cathode

1. ✔

2. ✘ Zn acts as cathode and Fe acts as anode

2. ✘

3. ✘ Sn acts as anode and Fe acts as cathode

3. ✘

4. ✘ Sn acts as cathode and Fe acts as anode

4. ✘

Question Number : 94 Question Id : 77951811702 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

During Vulcanization of raw rubber, the chemical added to it is

Options :

1. ✔ Sulphur

1. ✔

2. ✘ Phosphorus

2. ✘

3. ✘ Iodine

3. ✘

4. ✘ Sodium

4. ✘

Question Number : 95 Question Id : 77951811703 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which of the following is a natural polymer?

Options :

1. ✓ Cellulose

2. ✗ Teflon

3. ✗ Polyvinylchloride

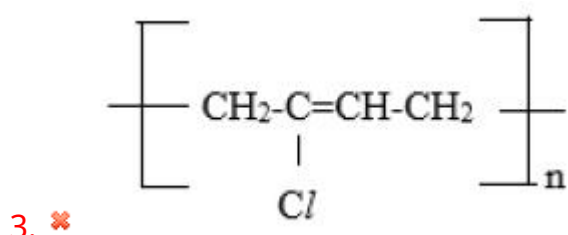
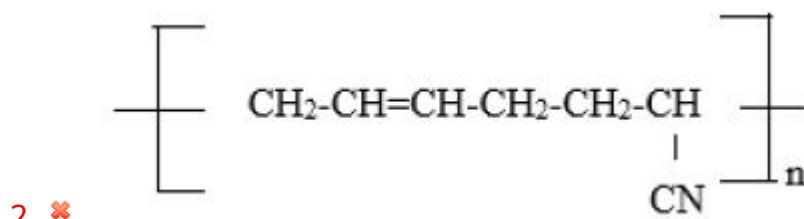
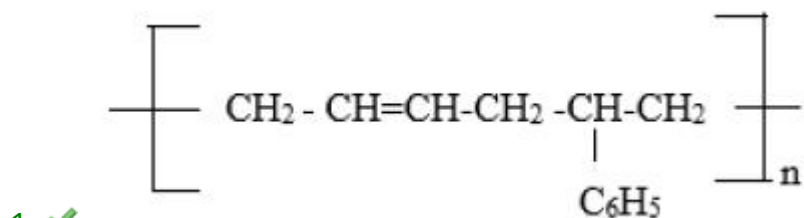
4. ✗ Neoprene rubber

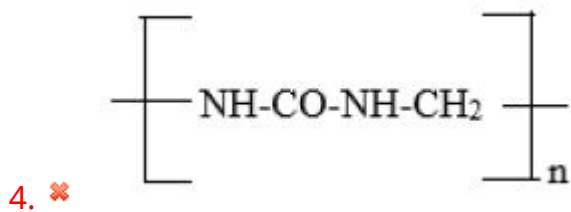
Question Number : 96 Question Id : 77951811704 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The structure of Buna -S polymer is

Options :





Question Number : 97 Question Id : 77951811705 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The polymer used in making gaskets and nono-stick coating utensils is

Options :

1. ✘ Polyvinyl chloride

2. ✘ Polystyrene

3. ✔ Polytetrafluoroethylene

4. ✘ Polythene

Question Number : 98 Question Id : 77951811706 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following in not to be considered as a primary fuel ?

Options :

1. ✘ Wood

2. ✘ Petroleum

3. ✔ Coke

4. ✘ Coal

Question Number : 99 Question Id : 77951811707 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The oxide of nitrogen responsible for depletion of ozone layer is

Options :

1. ✘ N_2O
2. ✘ NO_2
3. ✔ NO
4. ✘ N_2O_3

Question Number : 100 Question Id : 77951811708 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The BOD of highly polluted water is

Options :

1. ✔ 17 ppm
2. ✘ 10 ppm
3. ✘ 8 ppm
4. ✘ 12 ppm

Electrical and Electronics Engineering

Section Id :

779518232

Section Number :

4

Section type :

Online

| | |
|--|-----------|
| Mandatory or Optional : | Mandatory |
| Number of Questions : | 100 |
| Number of Questions to be attempted : | 100 |
| Section Marks : | 100 |
| Section Negative Marks : | 0 |
| Maximum Instruction Time : | 0 |
| Sub-Section Number : | 1 |
| Sub-Section Id : | 779518248 |
| Question Shuffling Allowed : | Yes |

Question Number : 101 Question Id : 77951811709 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Kirchhoff's first law ($\sum I=0$) is based on the conservation of

Options :

1. ✘ Energy
2. ✔ Charge
3. ✘ Momentum
4. ✘ Mass

Question Number : 102 Question Id : 77951811710 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Three resistances each of value 3Ω are connected in delta. Their value in each branch of equivalent star connection will be

Options :

1. ✘ 9Ω
2. ✔ 1Ω
3. ✘ 6Ω
4. ✘ 3Ω

Question Number : 103 Question Id : 77951811711 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which theorem simplifies a complex network into a single voltage source in series with a resistor?

Options :

1. ✘ Norton's theorem
2. ✘ Superposition theorem
3. ✔ Thevenin's theorem
4. ✘ Maximum Power transfer theorem

Question Number : 104 Question Id : 77951811712 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Who discovered the magnetic effect of electric current?

Options :

1. ✘ Faraday
2. ✔ Oersted
3. ✘ Ampere
4. ✘ Bohr

Question Number : 105 Question Id : 77951811713 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which of the following has a zero temperature coefficient of resistance?

Options :

1. ✘

Copper

2. ✘ Aluminum
3. ✔ Manganese
4. ✘ Carbon

**Question Number : 106 Question Id : 77951811714 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

Which material is best suited for making a permanent magnet?

Options :

1. ✘ Soft iron
2. ✘ Copper
3. ✔ Hard steel
4. ✘ Aluminum

**Question Number : 107 Question Id : 77951811715 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

Among the following which material has the highest dielectric strength?

Options :

1. ✘ Ceramic
2. ✘ Glass
3. ✘ Mica

4. ✓ Vacuum

**Question Number : 108 Question Id : 77951811716 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

The number of parallel paths for a 4-pole duplex lap winding will be

Options :

1. ✗ 2

2. ✗ 4

3. ✗ 6

4. ✓ 8

**Question Number : 109 Question Id : 77951811717 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

Number of tapping to each equalizer ring is equal to number of

Options :

1. ✗ Poles

2. ✓ Pole pairs

3. ✗ Parallel paths

4. ✗ Commutator segments

**Question Number : 110 Question Id : 77951811718 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

Flashing of field of DC generator means

Options :

1. ✘ Neutralization of residual magnetism
2. ✔ Creation of residual magnetism by a DC source
3. ✘ Increasing flux density
4. ✘ Decreasing flux density

**Question Number : 111 Question Id : 77951811719 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

External characteristics of a DC generator is a curve plotted between

Options :

1. ✘ Terminal voltage Vs Armature current
2. ✔ Terminal voltage Vs Load current
3. ✘ Induced emf Vs Armature current
4. ✘ No load voltage Vs Field current

**Question Number : 112 Question Id : 77951811720 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

In a DC shunt motor, if the armature current is doubled, the torque developed will be

Options :

1. ✘ Halved
2. ✘ Remain same
3. ✔ Doubled

4. ✘ Quadrupled

Question Number : 113 Question Id : 77951811721 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

At the moment a DC motor starts, the back emf (E_b) is

Options :

1. ✘ Maximum

2. ✘ Equal to the supply voltage

3. ✔ Zero

4. ✘ Half the supply voltage

Question Number : 114 Question Id : 77951811722 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Friction and windage losses in a DC motor are classified as

Options :

1. ✘ Electrical losses

2. ✔ Mechanical losses

3. ✘ Magnetic losses

4. ✘ Copper losses

Question Number : 115 Question Id : 77951811723 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Swinburne's test is performed at

Options :

1. ✘ Full load
2. ✘ Half load
3. ✔ No load
4. ✘ Variable load

Question Number : 116 Question Id : 77951811724 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Permanent Magnet Moving Coil (PMMC) instruments can be used only for

Options :

1. ✘ AC measurements
2. ✔ DC measurements
3. ✘ Both AC and DC
4. ✘ High frequency only

Question Number : 117 Question Id : 77951811725 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The operation of a thermocouple is primarily governed by which effect?

Options :

1. ✘ Peltier effect
2. ✘ Joule effect

3. ✓ Seebeck effect
4. ✘ Thomson effect

Question Number : 118 Question Id : 77951811726 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Creeping in an energy meter is a phenomenon where the disc rotates slowly when,

Options :

1. ✘ The load is very high
2. ✘ The power factor is unity
3. ✓ Only the voltage coil is energized and there is no load current
4. ✘ The braking magnet is removed

Question Number : 119 Question Id : 77951811727 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following is an “active” transducer commonly used in electronic instrumentation?

Options :

1. ✘ Resistance Temperature Detector (RTD)
2. ✘ LVDT
3. ✓ Thermocouple
4. ✘ Strain gauge

Question Number : 120 Question Id : 77951811728 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The Q-factor of a series resonant circuit is a measure of its

Options :

1. ✘ Power consumption
2. ✔ Selectivity
3. ✘ Frequency range
4. ✘ Voltage drop

Question Number : 121 Question Id : 77951811729 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If two branches in a parallel circuit have currents of 3A (resistive) and 4A (purely inductive), the total line current is

Options :

1. ✘ 7A
2. ✘ 1A
3. ✔ 5A
4. ✘ 12A

Question Number : 122 Question Id : 77951811730 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In the two-wattmeter method, if one wattmeter reads zero, the power factor of the load is

Options :

1. ✘ Unity

2. ✓ 0.5

3. ✗ Zero

4. ✗ 0.866

Question Number : 123 Question Id : 77951811731 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

For a pure sine wave, the ratio of RMS value to Average value is

Options :

1. ✗ Peak factor

2. ✓ Form factor

3. ✗ Quality factor

4. ✗ Power factor

Question Number : 124 Question Id : 77951811732 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In a balanced 3-phase star connected system, if the phase current is 15A, the line current is

Options :

1. ✗ 8.66 A

2. ✗ 25.98 A

3. ✓ 15 A

4. ✗ 45 A

Question Number : 125 Question Id : 77951811733 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In a shell type transformer, the magnetic circuit has

Options :

1. ✘ Only one path for flux
2. ✔ Two paths for flux
3. ✘ Three paths for flux
4. ✘ No path for flux

Question Number : 126 Question Id : 77951811734 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If a transformer has $R_{pu}=0.03$ and $X_{pu}=0.04$, its regulation at 0.8 power factor lagging is

Options :

1. ✘ 1.2%
2. ✘ 2.4%
3. ✔ 4.8%
4. ✘ 3.6%

Question Number : 127 Question Id : 77951811735 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A 2000/200 V transformer has a primary resistance of 2Ω . What is the primary resistance referred to the secondary side?

Options :

1. ✘ 0.2 Ω
2. ✔ 0.02 Ω
3. ✘ 200 Ω
4. ✘ 0.002 Ω

Question Number : 128 Question Id : 77951811736 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

To ensure that two transformers share the load in proportion to their KVA ratings, they should have the same

Options :

1. ✘ Core losses
2. ✔ Per unit (percentage) impedance
3. ✘ Efficiency
4. ✘ Magnetizing current

Question Number : 129 Question Id : 77951811737 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Heat dissipation in a transformer occurs through which of the following processes?

Options :

1. ✘ Conduction only
2. ✘ Convection only

3. ✘ Radiation only

4. ✔ Conduction, Convection and Radiation

Question Number : 130 Question Id : 77951811738 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which connection is best suited for 3-phase, 4-wire distribution (eg. Residential)?

Options :

1. ✘ Delta – Delta

2. ✘ Star – Star

3. ✔ Delta – Star

4. ✘ Star - Delta

Question Number : 131 Question Id : 77951811739 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What is the major disadvantage of an auto transformer?

Options :

1. ✘ High cost

2. ✘ Low efficiency

3. ✔ Lack of electrical isolation between primary and secondary

4. ✘ Very heavy weight

Question Number : 132 Question Id : 77951811740 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If an alternator has a flux per pole of 0.05 Wb, a frequency of 50 Hz, and 100 turns per phase (assume pitch factor and distribution factor is 1), the RMS phase emf is approximately

Options :

1. ✘ 222 V
2. ✔ 1110 V
3. ✘ 555 V
4. ✘ 444 V

Question Number : 133 Question Id : 77951811741 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which method provides the most accurate results for the voltage regulation of a non-salient pole alternator?

Options :

1. ✘ EMF method
2. ✘ MMF method
3. ✔ Poitier Triangle method
4. ✘ Direct loading test

Question Number : 134 Question Id : 77951811742 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Two alternators A and B are in parallel. Alternator A is adjusted to have a leading power factor. This will cause Alternator B to

Options :

1. ✘

Also have a leading power factor

2. ✓ Have a lagging power factor
3. ✗ Stop rotating
4. ✗ Carry zero current

**Question Number : 135 Question Id : 77951811743 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

A Synchronous motor used specifically for power factor correction (running at no load and over excited) is called a

Options :

1. ✗ Synchronous generator
2. ✓ Synchronous condenser
3. ✗ Induction generator
4. ✗ Variable speed drive

**Question Number : 136 Question Id : 77951811744 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

In the V-curve of a Synchronous motor, the minimum point of the curve corresponds to

Options :

1. ✗ Lagging power factor
2. ✓ Unity power factor
3. ✗ Minimum speed

4. ✘ Leading power factor

Question Number : 137 Question Id : 77951811745 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What is a Pony motor in the context of starting a Synchronous motor?

Options :

1. ✘ A motor that runs on DC only

2. ✔ A small auxiliary motor used to bring the main motor up to speed

3. ✘ The main cooling fan

4. ✘ A motor used to reverse the direction

Question Number : 138 Question Id : 77951811746 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A motor has synchronous speed of 1000 rpm and runs at 950 rpm. If the torque at this slip is 10 Nm. What is the torque if the slip is doubled? (assume low slip region)

Options :

1. ✘ 5 Nm

2. ✘ 10 Nm

3. ✔ 20 Nm

4. ✘ 40 Nm

Question Number : 139 Question Id : 77951811747 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In an Induction motor, the rotor copper loss is equal to

Options :

1. ✓ Slip x rotor input power
2. ✗ (1-slip) x rotor input power
3. ✗ Rotor input power/slip
4. ✗ Slip² x rotor input power

Question Number : 140 Question Id : 77951811748 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The pole changing method of speed control is only applicable to which type of motor?

Options :

1. ✗ Slip ring induction motor
2. ✓ Squirrel cage induction motor
3. ✗ Synchronous motor
4. ✗ DC shunt motor

Question Number : 141 Question Id : 77951811749 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Regenerative braking occurs only when the motor speed (N)

Options :

1. ✗ Is less than the synchronous speed

2. ✓ Is greater than the synchronous speed
3. ✗ Is exactly equal to synchronous speed
4. ✗ Is zero

Question Number : 142 Question Id : 77951811750 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A single phase induction motor is

Options :

1. ✗ Inherently self-starting
2. ✓ Not inherently self-starting
3. ✗ Self-starting only at high voltages
4. ✗ Always started by a DC motor

Question Number : 143 Question Id : 77951811751 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A universal motor is designed to operate on

Options :

1. ✗ DC supply only
2. ✗ AC supply only
3. ✓ Both AC and DC supply
4. ✗

3-phase supply only

Question Number : 144 Question Id : 77951811752 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In a BLDC motor, the windings are placed on the

Options :

1. ✘ Rotor
2. ✔ Stator
3. ✘ Shaft
4. ✘ Commutator

Question Number : 145 Question Id : 77951811753 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The number of pulses applied to a Stepper motor determines the

Options :

1. ✘ Speed of rotation
2. ✘ Torque produced
3. ✔ Total angle or distance of rotation
4. ✘ Direction of rotation

Question Number : 146 Question Id : 77951811754 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which type of generating station is best suited for peak load operation due to its quick starting ability?

Options :

1. ✘ Nuclear power plant
2. ✔ Gas turbine power plant
3. ✘ Thermal power plant
4. ✘ Solar power plant

Question Number : 147 Question Id : 77951811755 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which of the following is a byproduct of coal combination that can be repurposed by the construction industry?

Options :

1. ✘ Flue gas
2. ✔ Fly ash
3. ✘ Nitrogen oxide
4. ✘ Sludge

Question Number : 148 Question Id : 77951811756 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If the area under a 24 hour daily load curve is 480 MWh. The average load for that day is

Options :

1. ✘ 10 MW

2. ✓ 20 MW

3. ✗ 40 MW

4. ✗ 480 MW

Question Number : 149 Question Id : 77951811757 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which tariff is most suitable for industrial consumers with a significant reactive power load?

Options :

1. ✗ Flat rate tariff

2. ✗ Block rate tariff

3. ✗ Maximum demand tariff

4. ✓ KVA maximum demand tariff

Question Number : 150 Question Id : 77951811758 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A factory has a load of 400 kW at a power factor of 0.8 lagging. If the power factor is to be improved to unity, the required KVAR of the capacitor bank is

Options :

1. ✗ 400 KVAR

2. ✓ 300 KVAR

3. ✗ 500 KVAR

4. ✘ 100 KVAR

Question Number : 151 Question Id : 77951811759 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which circuit breaker is preferred for high voltage (up to 765 KV) and extra high voltage system?

Options :

1. ✘ Vacuum Circuit Breaker (VCB)

2. ✘ Air Circuit Breaker

3. ✔ SF₆ Circuit Breaker

4. ✘ Miniature Circuit Breaker (MCB)

Question Number : 152 Question Id : 77951811760 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Why the current limiting reactors usually “Air-cored” rather than “Iron-cored”?

Options :

1. ✘ To reduce weight

2. ✘ To improve cooling

3. ✔ To avoid magnetic saturation during heavy fault currents

4. ✘ To decrease the cost of iron

Question Number : 153 Question Id : 77951811761 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which type of distance relay is inherently “directional” and does not require an additional directional unit?

Options :

1. ✘ Impedance relay
2. ✘ Reactance relay
3. ✔ MHO relay
4. ✘ Plain offset relay

Question Number : 154 Question Id : 77951811762 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Bus bar protection is usually not provided for which type of system?

Options :

1. ✘ Extra high voltage systems
2. ✔ Small distribution substation
3. ✘ Power house bus bars
4. ✘ 132 KV substations

Question Number : 155 Question Id : 77951811763 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which type of lightning arrester is also known as a “Surge Diverter”?

Options :

1. ✘ Rod gap
2. ✘ Horn gap

3. ✘ Expulsion type

4. ✔ Valve type

Question Number : 156 Question Id : 77951811764 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If the radius of a conductor in a transmission line is doubled (keeping the spacing constant), the inductance of the line will

Options :

1. ✘ Increase

2. ✔ Decrease

3. ✘ Remains unchanged

4. ✘ Double

Question Number : 157 Question Id : 77951811765 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The sending end voltage of a line is 33 KV and the receiving end voltage is 30 KV. The voltage regulation of the line is

Options :

1. ✘ 3%

2. ✘ 5%

3. ✔ 10%

4. ✘ 11%

Question Number : 158 Question Id : 77951811766 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A long transmission line is energized at the sending end but kept open circuited at the receiving end. If the sending end voltage is 100 KV, the receiving end voltage is likely to be

Options :

1. ✘ 90 KV
2. ✘ 100 KV
3. ✔ 105 KV
4. ✘ 0 KV

Question Number : 159 Question Id : 77951811767 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What happens to the corona effect if the spacing between conductors is increased?

Options :

1. ✘ Corona increases
2. ✔ Corona decreases
3. ✘ Corona is absent
4. ✘ No effect

Question Number : 160 Question Id : 77951811768 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The converter used at the sending end of an HVDC system acts as a

Options :

1. ✘ Inverter
2. ✔ Rectifier
3. ✘ Cycloconverter
4. ✘ Chopper

Question Number : 161 Question Id : 77951811769 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If the length of the span between two level supports is increased by 20%, the sag will increase by approximately

Options :

1. ✘ 20%
2. ✘ 40%
3. ✔ 44%
4. ✘ 50%

Question Number : 162 Question Id : 77951811770 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A string of 3 discs can withstand a total voltage of 25.76 KV. If each unit can individually withstand a maximum of 11 KV. Then the string efficiency is

Options :

1. ✘ 68.75%
2. ✘ 65%

3. ✓ 78%

4. ✗ 85%

Question Number : 163 Question Id : 77951811771 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A 10 km long cable has an insulation resistance of 2 MΩ. What will be the insulation resistance for a 50 km length of the same cable?

Options :

1. ✗ 10 MΩ

2. ✓ 0.4 MΩ

3. ✗ 0.2 MΩ

4. ✗ 1 MΩ

Question Number : 164 Question Id : 77951811772 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In a substation Single Line Diagram (SLD), which equipment is typically placed closest to the incoming line?

Options :

1. ✗ Circuit breaker

2. ✗ Current transformer

3. ✓ Surge arrester

4. ✗ Power transformer

Question Number : 165 Question Id : 77951811773 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A single phase AC distributor has a total resistance of 0.2Ω and a reactance of 0.3Ω . If the load current is 100 A at 0.8 p.f lagging. The approximate voltage drop is

Options :

1. ✘ 16 V
2. ✔ 34 V
3. ✘ 50 V
4. ✘ 25 V

Question Number : 166 Question Id : 77951811774 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which of the following is the standard electrification system used by Indian railways for mainline trains?

Options :

1. ✘ 1500 V DC
2. ✘ 33 KV AC, 50 Hz
3. ✔ 25 KV AC, 50 Hz
4. ✘ 11 KV DC

Question Number : 167 Question Id : 77951811775 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The distance between 2 stops is 5 km. the average speed is 50 km/h and the stop time is 2 minutes. Find the scheduled speed.

Options :

1. ✓ 37.5 km/h
2. ✗ 42.5 km/h
3. ✗ 30 km/h
4. ✗ 50 km/h

**Question Number : 168 Question Id : 77951811776 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

The unit of Specific Energy Consumption (SEC) is

Options :

1. ✗ Watt-hours
2. ✗ kWh/km
3. ✓ Watt hours/ (tonne-km)
4. ✗ Joules/Tonne

**Question Number : 169 Question Id : 77951811777 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

A compressor in an electric locomotive is driven by an auxiliary motor to provide air for

Options :

1. ✗ Air conditioning only

2. ✓ Air breaks, horns, and sanders
3. ✘ Turbine rotation
4. ✘ Pantograph lowering only

**Question Number : 170 Question Id : 77951811778 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

In which type of wiring system is highly skilled labor required?

Options :

1. ✘ Cleat wiring
2. ✘ Casing – Capping wiring
3. ✓ Conduit wiring
4. ✘ Batten wiring

**Question Number : 171 Question Id : 77951811779 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

What is the purpose of “contingencies” in a cost estimate?

Options :

1. ✘ To pay for marketing
2. ✓ To cover unexpected, small costs
3. ✘ To increase contractor profit

4. ✘ To pay for taxes

Question Number : 172 Question Id : 77951811780 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

As per Rural Electrification Corporation (REC) specifications, what is the maximum permissible span from a pole to a house?

Options :

1. ✘ 5 m

2. ✘ 10 m

3. ✔ 35 m

4. ✘ 100 m

Question Number : 173 Question Id : 77951811781 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The earth resistance of an electrical installation should be

Options :

1. ✘ As high as possible

2. ✔ Extremely low (ideally < 1 ohm for substation)

3. ✘ Exactly 100 ohms

4. ✘ Infinite

Question Number : 174 Question Id : 77951811782 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which region of an NPN transistor is the most heavily doped?

Options :

1. ✘ Base
2. ✘ Collector
3. ✔ Emitter
4. ✘ They all are equal

Question Number : 175 Question Id : 77951811783 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

To ensure a Zener diode acts as a regulator, it must be operated in which biasing condition?

Options :

1. ✘ Forward bias
2. ✘ Reverse bias below breakdown voltage
3. ✔ Reverse bias above breakdown voltage (Zener region)
4. ✘ Zero bias

Question Number : 176 Question Id : 77951811784 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Lissajous patterns are used in a CRO to measure

Options :

1. ✘ Voltage and current
2. ✔ Frequency and phase shift

3. ✘ Resistance and Inductance

4. ✘ Power factor

**Question Number : 177 Question Id : 77951811785 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

A ripple frequency of a full wave rectifier with an input frequency of 50 Hz is

Options :

1. ✘ 25 Hz

2. ✘ 50 Hz

3. ✔ 100 Hz

4. ✘ 200 Hz

**Question Number : 178 Question Id : 77951811786 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0**

What is the primary purpose of biasing a transistor in an amplifier circuit?

Options :

1. ✘ To increase the gain

2. ✔ To ensure the transistor operates in the active region

3. ✘ To reduce the output impedance

4. ✘ To eliminate noise

Question Number : 179 Question Id : 77951811787 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What is the conduction angle of a Class-A amplifier?

Options :

1. ✘ 90°
2. ✘ 180°
3. ✘ 270°
4. ✔ 360°

Question Number : 180 Question Id : 77951811788 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which of the following oscillator types uses a capacitive voltage divider for feedback?

Options :

1. ✘ Hartley oscillator
2. ✔ Colpitts oscillator
3. ✘ Wein Bridge oscillator
4. ✘ Crystal oscillator

Question Number : 181 Question Id : 77951811789 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which of the following is not a typical application of an oscillator?

Options :

1. ✘ Signal generator

2. ✘ Radio transmitter

3. ✔ Rectifier

4. ✘ Digital gate

Question Number : 182 Question Id : 77951811790 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What is the result of the binary addition: 1_2+1_2 ?

Options :

1. ✘ 1

2. ✘ 2

3. ✔ 10

4. ✘ 11

Question Number : 183 Question Id : 77951811791 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The absorption law in Boolean algebra is

Options :

1. ✘ $A+AB=B$

2. ✔ $A+AB=A$

3. ✘ $A(A+B)=B$

4. ✘

$$A+A'B=A+B$$

Question Number : 184 Question Id : 77951811792 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The register is a type of

Options :

1. ✓ Sequential circuit
2. ✗ Combinational circuit
3. ✗ CPU
4. ✗ Latches

Question Number : 185 Question Id : 77951811793 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The fastest type of memory storage located within the CPU is

Options :

1. ✗ Cache
2. ✗ Main memory
3. ✓ Registers
4. ✗ ROM

Question Number : 186 Question Id : 77951811794 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which instruction is used to set the carry flag?

Options :

1. ✘ CLR C
2. ✔ SETB C
3. ✘ CPL C
4. ✘ MOV C, #1

Question Number : 187 Question Id : 77951811795 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What is the size of the Stack Pointer (SP) in 8051 microcontroller?

Options :

1. ✘ 4-bit
2. ✔ 8-bit
3. ✘ 16-bit
4. ✘ 32-bit

Question Number : 188 Question Id : 77951811796 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A DIAC remains in the 'OFF' state until the applied voltage reaches the

Options :

1. ✘ Peak voltage
2. ✔ Break over voltage
3. ✘

Holding voltage

4. ✘ Knee voltage

Question Number : 189 Question Id : 77951811797 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What happens to the firing angle of the SCR if the resistance (R) in the UJT's RC circuit is increased?

Options :

1. ✔ Firing angle increases (delay increases)

2. ✘ Firing angle decreases

3. ✘ Firing angle remains the same

4. ✘ The SCR will stay permanently ON

Question Number : 190 Question Id : 77951811798 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The process of turning OFF a conducting SCR is known as

Options :

1. ✘ Triggering

2. ✘ Biasing

3. ✔ Commutation

4. ✘ Rectification

Question Number : 191 Question Id : 77951811799 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A class C chopper is formed by connecting

Options :

1. ✘ Class A and Class B in series
2. ✔ Class A and Class B in parallel
3. ✘ Two Class D Choppers
4. ✘ A step-up and step-down choppers in series

Question Number : 192 Question Id : 77951811800 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What is the main disadvantage of phase angle control in AC voltage controllers?

Options :

1. ✘ It is very expensive
2. ✘ It cannot be used with DC
3. ✔ Introduction of harmonics in the system
4. ✘ It is very bulky

Question Number : 193 Question Id : 77951811801 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

To obtain "Four-Quadrant" operation of a DC motor, which of the following is required?

Options :

1. ✘ A single-phase semi converter

2. ✓ Dual converter
3. ✘ Full-wave bridge rectifier
4. ✘ Step down chopper

Question Number : 194 Question Id : 77951811802 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A 3-phase AC voltage regulator used for motor control typically employs

Options :

1. ✘ Six diodes in a bridge
2. ✓ Six SCRs connected in anti-parallel pairs
3. ✘ One TRIAC per phase
4. ✘ Four MOSFETS and a capacitor

Question Number : 195 Question Id : 77951811803 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The typical switching frequency of a modern SMPS ranges from

Options :

1. ✘ 50 Hz to 100 Hz
2. ✘ 1 Hz to 5 Hz
3. ✓ 20 KHz to several MHz

25 Hz to 50 Hz

4. ✘

Question Number : 196 Question Id : 77951811804 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What is the transfer time for a high quality online UPS?

Options :

1. ✘ 30 milli seconds

2. ✔ Zero milli seconds

3. ✘ One second

4. ✘ 40 milli seconds

Question Number : 197 Question Id : 77951811805 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What is the main advantage of regenerative braking in EVs?

Options :

1. ✘ It stops the car faster

2. ✔ It recovers kinetic energy to charge the battery

3. ✘ It eliminates the need for brake pads

4. ✘ It increases the top speed

Question Number : 198 Question Id : 77951811806 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What is the primary material used as the anode in most Lithium-Ion batteries for EVs?

Options :

1. ✘ Lithium metal
2. ✘ Cobalt
3. ✔ Graphite
4. ✘ Aluminum

Question Number : 199 Question Id : 77951811807 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The charging rate of a battery typically decreases with

Options :

1. ✘ An increase in temperature
2. ✔ A decrease in temperature
3. ✘ Decrease in internal resistance
4. ✘ An increase in plate surface area

Question Number : 200 Question Id : 77951811808 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In a BMS, what does “Thermal Management” refer to?

Options :

1. ✘ Only cooling the battery
2. ✘ Only heating the battery

3. ✓ Monitoring and controlling the battery's temperature to operate within safe limits
4. ✗ Maximizing battery weight