## NTA CUET UG 11th May to 31st May 2026

| | |
|---|---|
| Application No | |
| Candidate Name | |
| Roll No. | |
| Test Date | 20/05/2026 |
| Test Time | 9:00 AM - 12:00 PM |
| Subject | 20th May 26 D8S1 DS23 Combination 14 |

Section : **Mathematics Section A**

**Q.1**

If $y = \sqrt{x} + \frac{1}{\sqrt{x}}$, then $2x\frac{dy}{dx}$ is equal to

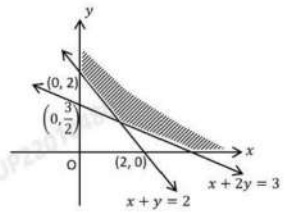
1. $\sqrt{x} - \frac{1}{\sqrt{x}}$
2. $\sqrt{x} + \frac{1}{\sqrt{x}}$
3. $\frac{1}{\sqrt{x}} + \sqrt{x}$
4. $\frac{1}{2\sqrt{x}} + \frac{1}{2x\sqrt{x}}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785029**
Option 1 ID : **2268953044185**
Option 2 ID : **2268953044186**
Option 3 ID : **2268953044187**
Option 4 ID : **2268953044188**
Status : **Answered**
Chosen Option : **1**

**Q.2**

Which of the following set of constraints represents the feasible region (shaded portion) in the figure given below?




1. $x + y \leq 2, x + 2y \leq 3, x, y \geq 0$
2. $x + y \leq 2, x + 2y \geq 3, x, y \geq 0$
3. $x + y \geq 2, x + 2y \geq 3, x, y \geq 0$
4. $x + y \geq 2, x + 2y \leq 3, x, y \geq 0$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785039**
Option 1 ID : **2268953044225**
Option 2 ID : **2268953044226**
Option 3 ID : **2268953044227**
Option 4 ID : **2268953044228**
Status : **Answered**
Chosen Option : **3**

**Q.3**

Value of the determinant $\begin{vmatrix} \log_3 512 & \log_4 3 \\ \log_3 8 & \log_4 9 \end{vmatrix}$ is

1. 15
2. 15/2
3. 21/2
4. 21

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785028**
Option 1 ID : **2268953044181**
Option 2 ID : **2268953044182**
Option 3 ID : **2268953044183**
Option 4 ID : **2268953044184**
Status : **Answered**
Chosen Option : **2**

Q.4

General solution of the differential equation

$\frac{dy}{dx} = e^{x-y} + 3x^2e^{-y}$ is: (Where $c$ is an arbitrary constant)

1. $e^{-y} + e^{x} = x^3 + c$
2. $e^{-y} = e^{x} + x^3 + c$
3. $e^{y} = e^{x} - x^3 + c$
4. $e^{y} = e^{x} + x^3 + c$

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785036**
Option 1 ID : **2268953044213**
Option 2 ID : **2268953044214**
Option 3 ID : **2268953044215**
Option 4 ID : **2268953044216**
Status : **Answered**
Chosen Option : **4**

Q.5

Particular solution of the differential equation $\frac{dy}{dx} + 2y^2 = 0$, given $y = 1$, when $x = 1$, is

1. $y = 2x - 1$
2. $y = 1 - 2x$
3. $y = \frac{1}{2x-1}$
4. $y = \frac{1}{1-2x}$

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785037**
Option 1 ID : **2268953044217**
Option 2 ID : **2268953044218**
Option 3 ID : **2268953044219**
Option 4 ID : **2268953044220**
Status : **Answered**
Chosen Option : **4**

Q.6

If $A = [a_{ij}]_{3\times3}$, where $a_{ij} = \begin{cases} i+j, & i \le j \\ i-j, & i > j \end{cases}$, then

Match **List-I** with **List-II**

| **List-I** | **List-II** |
|---|---|
| (A) $\lvert A\rvert$ | (I) 176 |
| (B) $\lvert 2A\rvert$ | (II) 10648 |
| (C) $\lvert adjA\rvert$ | (III) 22 |
| (D) $\lvert A(adjA)\rvert$ | (IV) 484 |

Choose the **correct** answer from the options given below:

1. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)
2. (A) - (III), (B) - (I), (C) - (IV), (D) - (II)
3. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)
4. (A) - (II), (B) - (IV), (C) - (I), (D) - (III)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785027**
Option 1 ID : **2268953044177**
Option 2 ID : **2268953044178**
Option 3 ID : **2268953044179**
Option 4 ID : **2268953044180**
Status : **Answered**
Chosen Option : **2**

**Q.7**

If $P(A)=\frac{2}{5}$, $P(\overline{B})=\frac{4}{7}$ and $P(A\cup B)=\frac{2}{3}$, then which of the following are correct?

(A) $P(A\cap B)=\frac{17}{105}$

(B) $P(A/B)=\frac{17}{42}$

(C) A and B are independent events

(D) $P(B/A)=\frac{17}{42}$

Choose the ***correct*** answer from the options given below:

1. (A), (B) and (D) only
2. (B) and (C) only
3. (A) and (D) only
4. (A) and (B) only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785038**
Option 1 ID : **2268953044221**
Option 2 ID : **2268953044222**
Option 3 ID : **2268953044223**
Option 4 ID : **2268953044224**
Status : **Answered**
Chosen Option : **4**

**Q.8**

If A is matrix of order $3\times 4$ and B is matrix such that $A^TB$ and $BA^T$ are both defined, then the order of B is

[Where $A^T$ denotes transpose of matrix A]

1. 3 x 4
2. 3 x 3
3. 4 x 3
4. 4 x 4

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785025**
Option 1 ID : **2268953044169**
Option 2 ID : **2268953044170**
Option 3 ID : **2268953044171**
Option 4 ID : **2268953044172**
Status : **Answered**
Chosen Option : **1**

Q.9

If the function $f(x) = x^3 - kx$ is increasing for all real value of $x$, then

1. $k \geq 0$
2. $k \leq 0$
3. $k > 0$
4. $k < 1$

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785030**
Option 1 ID : **2268953044189**
Option 2 ID : **2268953044190**
Option 3 ID : **2268953044191**
Option 4 ID : **2268953044192**
Status : **Answered**
Chosen Option : **2**

Q.10

For the function $f(x) = ax + \frac{b}{x}$, $a > 0, b > 0$, which of the following statements are correct ?

(A) Function $f(x)$ is increasing on $\left(\sqrt{\frac{b}{a}}, \infty\right)$.

(B) Function $f(x)$ is increasing on $(-\infty, \infty)$.

(C) Function $f(x)$ is decreasing on $\left(-\sqrt{\frac{b}{a}}, \sqrt{\frac{b}{a}}\right)$.

(D) Function $f(x)$ is increasing on $\left(-\infty, -\sqrt{\frac{b}{a}}\right)$.

Choose the ***correct*** answer from the options given below:

1. (A), (B) and (D) only
2. (A) and (C) only
3. (A), (C) and (D) only
4. (A) and (D) only

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785031**
Option 1 ID : **2268953044193**
Option 2 ID : **2268953044194**
Option 3 ID : **2268953044195**
Option 4 ID : **2268953044196**
Status : **Answered**
Chosen Option : **2**

**Q.11**

Area of the region bounded by the curves $x = y^3, y = -1, y = 2$ and $y$-axis, is

1. $\frac{11}{4}$ square units
2. $\frac{15}{4}$ square units
3. $\frac{17}{4}$ square units
4. $\frac{19}{4}$ square units

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785034**
Option 1 ID : **2268953044205**
Option 2 ID : **2268953044206**
Option 3 ID : **2268953044207**
Option 4 ID : **2268953044208**
Status : **Answered**
Chosen Option : **3**

Q.12

Match **List-I** with **List-II**

| **List-I** | **List-II** |
|---|---|
| Differential equation | Order and Degree |
| (A) $\frac{d^2y}{dx^2} = 1 + \sqrt{\frac{dy}{dx}}$ | (I) Order = 2, Degree = 1 |
| (B) $\frac{dy}{dx} + 2\frac{dx}{dy} = x$ | (II) Order = 1, degree = 1 |
| (C) $y + 2\frac{dy}{dx} = \int y\,dx$ | (III) Order = 1, degree = 2 |
| (D) $\frac{dy}{dx} + y = logx$ | (IV) Order = 2, degree = 2 |

Choose the **correct** answer from the options given below:

1. (A) - (IV), (B) - (III), (C) - (I), (D) - (II)
2. (A) - (IV), (B) - (III), (C) - (II), (D) - (I)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (I), (B) - (III), (C) - (IV), (D) - (II)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785035**
Option 1 ID : **2268953044209**
Option 2 ID : **2268953044210**
Option 3 ID : **2268953044211**
Option 4 ID : **2268953044212**
Status : **Answered**
Chosen Option : **1**

Q.13

$\int \frac{1+x+\sqrt{x+x^2}}{\sqrt{1+x}+\sqrt{x}}\,dx$ is equal to (Where $c$ is an arbitrary constant)

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

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

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

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

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785032**
Option 1 ID : **2268953044197**
Option 2 ID : **2268953044198**
Option 3 ID : **2268953044199**
Option 4 ID : **2268953044200**
Status : **Answered**
Chosen Option : **2**

Q.14

If $\int_0^a \sqrt{x}dx = \frac{4a}{3}$, $a > 0$, then the value of $\int_a^{a+1} xdx$ is

1. $\frac{3}{2}$
2. $\frac{9}{2}$
3. $\frac{5}{2}$
4. $\frac{7}{2}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785033**
Option 1 ID : **2268953044201**
Option 2 ID : **2268953044202**
Option 3 ID : **2268953044203**
Option 4 ID : **2268953044204**
Status : **Answered**
Chosen Option : **2**

Q.15

If $A = [a_{ij}]_{3\times3}$, where $a_{ij} = \begin{cases} 0, & i \neq j \\ 2i - j, & i = j \end{cases}$, then $A$ is

(A) Diagonal matrix

(B) Symmetric matrix

(C) Scalar matrix

(D) Unit matrix

Choose the ***correct*** answer from the options given below:

1. (A) and (B) only
2. (A), (B) and (C) only
3. (C) and (D) only
4. (A) and (D) only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785026**
Option 1 ID : **2268953044173**
Option 2 ID : **2268953044174**
Option 3 ID : **2268953044175**
Option 4 ID : **2268953044176**
Status : **Answered**
Chosen Option : **1**

Section : **Mathematics Section B1 Core**

**Q.16**

If a unit vector $\vec{a}$ makes equal acute angles with axes, then the projection of $\vec{a}$ on $\vec{b} = 5\hat{i} + 7\hat{j} - \hat{k}$, is

1. $\frac{11}{5\sqrt{3}}$
2. $\frac{11}{15}$
3. $\frac{4}{5}$
4. $\frac{4}{5\sqrt{3}}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785064**
Option 1 ID : **2268953044325**
Option 2 ID : **2268953044326**
Option 3 ID : **2268953044327**
Option 4 ID : **2268953044328**
Status : **Answered**
Chosen Option : **2**

Q.17

If A and B are non-singular matrices of order n, then

[where $A^T$ denotes transpose of A]

Match **List-I** with **List-II**

| **List-I** | **List-II** |
|---|---|
| (A) adj(AB) | (I) $\|A\|^{n-1}$ |
| (B) adj(adjA) | (II) (adjB) (adjA) |
| (C) adj($A^T$) | (III) $(adjA)^T$ |
| (D) \|adjA\| | (IV) $\|A\|^{n-2}A$ |

Choose the correct answer from the options given below:

1. (A) - (II), (B) - (I), (C) - (III), (D) - (IV)
2. (A) - (II), (B) - (IV), (C) - (III), (D) - (I)
3. (A) - (II), (B) - (IV), (C) - (I), (D) - (III)
4. (A) - (II), (B) - (I), (C) - (IV), (D) - (III)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785048**
Option 1 ID : **2268953044261**
Option 2 ID : **2268953044262**
Option 3 ID : **2268953044263**
Option 4 ID : **2268953044264**
Status : **Answered**
Chosen Option : **2**

Q.18

If $x = t^2, y = t^3$, then $\frac{d^2y}{dx^2}$ is equal to:

1. $\frac{3t}{2}$
2. $\frac{3}{2t}$
3. $\frac{3}{2}$
4. $\frac{3}{4t}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785051**
Option 1 ID : **2268953044273**
Option 2 ID : **2268953044274**
Option 3 ID : **2268953044275**
Option 4 ID : **2268953044276**
Status : **Answered**
Chosen Option : **4**

**Q.19**

If $A = \begin{bmatrix} a & b \\ b & a \end{bmatrix}$ and $A^2 = \begin{bmatrix} \alpha & \beta \\ \beta & \alpha \end{bmatrix}$, then the value(s) of $(a - b)$ is/are

1. $\sqrt{\alpha - \beta}$
2. $-\sqrt{\alpha + \beta}$
3. $\pm\sqrt{\alpha - \beta}$
4. $\sqrt{\alpha + \beta}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785044**
Option 1 ID : **2268953044245**
Option 2 ID : **2268953044246**
Option 3 ID : **2268953044247**
Option 4 ID : **2268953044248**
Status : **Answered**
Chosen Option : **2**

Q.20

Area bounded by the curve $y = x^3$ and the line $y = 4x$ is

1. $\frac{1}{4}$ Square units

2. $8$ Square units

3. $\frac{1}{8}$ Square units

4. $4$ Square units

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785058**
Option 1 ID : **2268953044301**
Option 2 ID : **2268953044302**
Option 3 ID : **2268953044303**
Option 4 ID : **2268953044304**
Status : **Answered**
Chosen Option : **2**

Q.21

If $\vec{a} = \hat{i} + \hat{j} - \hat{k}$ and $\vec{b} = \hat{i} - 2\hat{j} + \hat{k}$, then

Match **List-I** with **List-II**

| **List-I** | **List-II** |
|---|---|
| (A) $\left\|\vec{a} + \vec{b}\right\|$ | (I) 2 |
| (B) $\left\|\vec{a} - \vec{b}\right\|$ | (II) $\sqrt{5}$ |
| (C) $\left\|\vec{a}.\vec{b}\right\|$ | (III) $\sqrt{14}$ |
| (D) $\left\|\vec{a} \times \vec{b}\right\|$ | (IV) $\sqrt{13}$ |

Choose the **correct** answer from the options given below:

1. (A) - (IV), (B) - (II), (C) - (I), (D) - (III)
2. (A) - (III), (B) - (IV), (C) - (II), (D) - (I)
3. (A) - (III), (B) - (II), (C) - (IV), (D) - (I)
4. (A) - (II), (B) - (IV), (C) - (I), (D) - (III)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785063**
Option 1 ID : **2268953044321**
Option 2 ID : **2268953044322**
Option 3 ID : **2268953044323**
Option 4 ID : **2268953044324**
Status : **Answered**
Chosen Option : **4**

**Q.22**

If vertices A and C of a $\Delta ABC$ lie along the line $\frac{x-3}{3}=\frac{y+7}{-1}=\frac{z+2}{5}$ and vertex B has coordinates (3, -8, 1) and line segment AC has length $\sqrt{35}$, then the area of $\Delta ABC$ is:-

1. $\frac{1}{2}\sqrt{94}$ Sq. units
2. $\sqrt{94}$ Sq. units
3. $\sqrt{\frac{175}{7}}$ Sq. units
4. $\frac{1}{2}\sqrt{\frac{175}{7}}$ Sq. units

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785068**
Option 1 ID : **2268953044341**
Option 2 ID : **2268953044342**
Option 3 ID : **2268953044343**
Option 4 ID : **2268953044344**
Status : **Answered**
Chosen Option : **2**

**Q.23**

In a sphere, the rate of change of volume is

1. $\pi$ times the rate of change of radius.
2. $\pi$ times the rate of change of diameter.
3. Surface area times the rate of change of diameter.
4. Surface area times of rate of change of radius.

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785052**
Option 1 ID : **2268953044277**
Option 2 ID : **2268953044278**
Option 3 ID : **2268953044279**
Option 4 ID : **2268953044280**
Status : **Answered**
Chosen Option : **4**

**Q.24**

If the lines $x = ay + b, z = cy + d$ and $x = a'y + b', z = c'y + d'$ are perpendicular, then

1. $a\,a' + c\,c' = 1$
2. $a\,a' + c\,c' = 0$
3. $a\,a' + c\,c' = -1$
4. $a\,a' = c\,c'$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785066**
Option 1 ID : **2268953044333**
Option 2 ID : **2268953044334**
Option 3 ID : **2268953044335**
Option 4 ID : **2268953044336**
Status : **Answered**
Chosen Option : **2**

Q.25

Match **List-I** with **List-II**

| **List-I** | **List-II** |
|---|---|
| **Inverse Trigonometric function** | **Principal values** |
| (A) $\sec^{-1}(-2)$ | (I) $\frac{5\pi}{6}$ |
| (B) $\text{cosec}^{-1}(-\sqrt{2})$ | (II) $\frac{2\pi}{3}$ |
| (C) $\text{cosec}^{-1}(2)$ | (III) $-\frac{\pi}{4}$ |
| (D) $\sec^{-1}\left(-\frac{2}{\sqrt{3}}\right)$ | (IV) $\frac{\pi}{6}$ |

Choose the **correct** answer from the options given below:

1. (A) - (IV), (B) - (III), (C) - (I), (D) - (II)
2. (A) - (II), (B) - (III), (C) - (IV), (D) - (I)
3. (A) - (II), (B) - (IV), (C) - (I), (D) - (III)
4. (A) - (IV), (B) - (I), (C) - (II), (D) - (III)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785042**
Option 1 ID : **2268953044237**
Option 2 ID : **2268953044238**
Option 3 ID : **2268953044239**
Option 4 ID : **2268953044240**
Status : **Answered**
Chosen Option : **3**

**Q.26**

Let R = {(1, 1), (2, 2), (3, 3), (1,2)} be the relation on the set {1, 2, 3}, then the minimum number of elements to be added so that R is an equivalence relation, is:

1. 4
2. 3
3. 5
4. 1

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785041**
Option 1 ID : **2268953044233**
Option 2 ID : **2268953044234**
Option 3 ID : **2268953044235**
Option 4 ID : **2268953044236**
Status : **Answered**
Chosen Option : **4**

**Q.27**

If $A_1, A_2, A_3, \cdots\cdots A_8$ are independent events such that $P(A_i) = \frac{1}{1+i}, 1 \le i \le 8$, then the probability that none of the events occur, is

1. $\frac{2}{9}$
2. $\frac{1}{3}$
3. $\frac{8}{9}$
4. $\frac{1}{9}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785074**
Option 1 ID : **2268953044365**
Option 2 ID : **2268953044366**
Option 3 ID : **2268953044367**
Option 4 ID : **2268953044368**
Status : **Answered**
Chosen Option : **2**

**Q.28**

Let $\mathbb{N}$, $\mathbb{Z}$ and $\mathbb{R}$ be the set of natural numbers, set of integers and set of real numbers respectively, $[.]$ denotes the greatest integer function then

Match **List-I** with **List-II**

| List-I | List-II |
|---|---|
| (A) $f: \mathbb{N} \to \mathbb{N}, f(x) = x^2$ | (I) One-one and onto |
| (B) $f: \mathbb{R} \to \mathbb{R}, f(x) = x^2$ | (II) One-one but not onto |
| (C) $f: \mathbb{R} \to \mathbb{R}, f(x) = 2x + 3$ | (III) Not one-one but onto |
| (D) $f: \mathbb{R} \to Z, f(x) = [x]$ | (IV) Neither one-one nor onto |

Choose the **correct** answer from the options given below:

1. (A) - (II), (B) - (IV), (C) - (I), (D) - (III)
2. (A) - (II), (B) - (I), (C) - (III), (D) - (IV)
3. (A) - (IV), (B) - (III), (C) - (II), (D) - (I)
4. (A) - (III), (B) - (II), (C) - (I), (D) - (IV)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785040**
Option 1 ID : **2268953044229**
Option 2 ID : **2268953044230**
Option 3 ID : **2268953044231**
Option 4 ID : **2268953044232**
Status : **Answered**
Chosen Option : **1**

**Q.29**

$$\begin{vmatrix} \lambda & \sin\theta & \cos\theta \\ -\sin\theta & -\lambda & 1 \\ \cos\theta & 1 & \lambda \end{vmatrix}$$ is equal to

1. $-\lambda^3$
2. $\lambda^3$
3. 1
4. 0

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785046**
Option 1 ID : **2268953044253**
Option 2 ID : **2268953044254**
Option 3 ID : **2268953044255**
Option 4 ID : **2268953044256**
Status : **Answered**
Chosen Option : **1**

**Q.30**

Let $\vec{a}$ and $\vec{b}$ are two unit vectors such that $\vec{a}+\vec{b}$ is also unit vector, then which of the following are TRUE?

(A) $|\vec{a}-\vec{b}|=0$

(B) $|\vec{a}-\vec{b}|=\sqrt{3}$

(C) Angle between $\vec{a}$ and $\vec{b}=\frac{2\pi}{3}$

(D) Angle between $\vec{a}$ and $\vec{a}+\vec{b}=\frac{\pi}{3}$

Choose the ***correct*** answer from the options given below:

1. (B), (C) and (D) only
2. (A) and (C) only
3. (B) and (C) only
4. (A), (C) and (D) only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785062**
Option 1 ID : **2268953044317**
Option 2 ID : **2268953044318**
Option 3 ID : **2268953044319**
Option 4 ID : **2268953044320**
Status : **Answered**
Chosen Option : **2**

**Q.31**

If $\vec{a}$ and $\vec{b}$ are two vectors such that $|\vec{a}|=2$, $|\vec{b}|=1$ and $\vec{a}.\vec{b}=\sqrt{3}$ then the angle between $2\vec{b}$ and $-\vec{a}$ is:

1. $\frac{\pi}{6}$
2. $\frac{\pi}{3}$
3. $\frac{5\pi}{6}$
4. $\frac{5\pi}{3}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785065**
Option 1 ID : **2268953044329**
Option 2 ID : **2268953044330**
Option 3 ID : **2268953044331**
Option 4 ID : **2268953044332**
Status : **Answered**
Chosen Option : **2**

**Q.32**

If $\int \frac{1+cos8\theta}{tan2\theta - cot2\theta} d\theta = \lambda\, cos8\theta + c$, then $\lambda$ is equal to (where $c$ is constant of integration)

1. $-\frac{1}{16}$
2. $\frac{1}{16}$
3. $\frac{1}{8}$
4. $-\frac{1}{8}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785055**
Option 1 ID : **2268953044289**
Option 2 ID : **2268953044290**
Option 3 ID : **2268953044291**
Option 4 ID : **2268953044292**
Status : **Answered**
Chosen Option : **2**

**Q.33**

The maximum value of the linear programming problem, max. $z = 3x + 4y$,

subject to the constraints:

$x - y \leq -1,\ x \geq y,\ x, y \geq 0$ is

1. 7
2. 4
3. 3
4. maximum value doesnot exist

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785069**
Option 1 ID : **2268953044345**
Option 2 ID : **2268953044346**
Option 3 ID : **2268953044347**
Option 4 ID : **2268953044348**
Status : **Answered**
Chosen Option : **4**

**Q.34**

If $f(x)=\begin{cases}\frac{x-2}{|x-2|}+a, & x<2\\ a+b, & x=2\\ \frac{x-2}{|x-2|}+b, & x>2\end{cases}$ is continuous at $x=2$, then

1. $a=1, b=1$
2. $a=1, b=-1$
3. $a=-1, b=1$
4. $a=-1, b=-1$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785050**
Option 1 ID : **2268953044269**
Option 2 ID : **2268953044270**
Option 3 ID : **2268953044271**
Option 4 ID : **2268953044272**
Status : **Answered**
Chosen Option : **2**

**Q.35**

General solution of the differential equation $(x+2y^3)dy=ydx$ is

(Where C is an arbitrary constant)

1. $y=x(x^2+\mathrm{C})$
2. $yx=x^2+\mathrm{C}$
3. $\frac{x}{y}=y+\mathrm{C}$
4. $x=y(y^2+\mathrm{C})$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785061**
Option 1 ID : **2268953044313**
Option 2 ID : **2268953044314**
Option 3 ID : **2268953044315**
Option 4 ID : **2268953044316**
Status : **Answered**
Chosen Option : **4**

**Q.36**

If A, B and C are square matrices of order n x n, then which of the following are TRUE?

[Where $A^T$ is transpose of matrix A]

(A) $(A + B)^T = A^T + B^T$

(B) $(A\ B)^T = A^T\ B^T$

(C) $(A\ B\ C)^T = C^T\ B^T\ A^T$

(D) $(BA)^T = A^T\ B^T$

Choose the ***correct*** answer from the options given below:

1. (A), (B) and (C) only
2. (A) and (D) only
3. (A) and (B) only
4. (A), (C) and (D) only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785043**
Option 1 ID : **2268953044241**
Option 2 ID : **2268953044242**
Option 3 ID : **2268953044243**
Option 4 ID : **2268953044244**
Status : **Answered**
Chosen Option : **4**

Q.37

$\int \frac{cos5x + cos4x}{1 - 2cos3x} dx$ is equal to [$C$ is an arbitrary constant]

1. $-\frac{sin2x}{2} - sinx + c$

2. $\frac{sin2x}{2} + sinx + c$

3. $sin2x - \frac{1}{2}sinx + c$

4. $-sin2x - sinx + c$

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785057**
Option 1 ID : **2268953044297**
Option 2 ID : **2268953044298**
Option 3 ID : **2268953044299**
Option 4 ID : **2268953044300**
Status : **Answered**
Chosen Option : **2**

Q.38

If $A=\begin{bmatrix}1 & 2 & -1\\ -1 & 1 & 2\\ 2 & -1 & 1\end{bmatrix}$, then $|adj\ (adj\ A)|$ is equal to

1. 14
2. $14^2$
3. $14^3$
4. $14^4$

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785047**
Option 1 ID : **2268953044257**
Option 2 ID : **2268953044258**
Option 3 ID : **2268953044259**
Option 4 ID : **2268953044260**
Status : **Answered**
Chosen Option : **4**

Q.39

The solution set of the inequation $2x+3y>12$ is

1. $xy$- plane except the points lying on the line $2x+3y=12$
2. Open half plane containing the origin
3. Open half plane not containing the origin
4. $xy$-plane with all the points lying on the line $2x+3y=12$

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785070**
Option 1 ID : **2268953044349**
Option 2 ID : **2268953044350**
Option 3 ID : **2268953044351**
Option 4 ID : **2268953044352**
Status : **Answered**
Chosen Option : **3**

**Q.40**

The solution of the differential equation $(x-1)\frac{dx}{dy}+(y-2)=0$, given $x=1, y=1$ represents a

1. Parabola
2. Circle
3. Ellipse
4. Hyperbola

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785060**
Option 1 ID : **2268953044309**
Option 2 ID : **2268953044310**
Option 3 ID : **2268953044311**
Option 4 ID : **2268953044312**
Status : **Answered**
Chosen Option : **2**

**Q.41**

The area bounded by the lines $y=1+|x+1|, x=-3, x=3$ and $y=0$ is

1. 14 Square units
2. 15 Square units
3. 16 Square units
4. 17 Square units

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785059**
Option 1 ID : **2268953044305**
Option 2 ID : **2268953044306**
Option 3 ID : **2268953044307**
Option 4 ID : **2268953044308**
Status : **Answered**
Chosen Option : **2**

Q.42

If A and B are two independent events and P(A)= $\frac{1}{2}$, P(B) = 1/3, then

Match **List-I** with **List-II**

| **List-I** | **List-II** |
|---|---|
| (A) $P(A \cup B)$ | (I) $\frac{5}{6}$ |
| (B) $P(A \cap \bar{B})$ | (II) $\frac{1}{6}$ |
| (C) $P(\bar{A} \cap B)$ | (III) $\frac{2}{3}$ |
| (D) $P(\overline{A \cap B})$ | (IV) $\frac{1}{3}$ |

Choose the **correct** answer from the options given below:

1. (A) - (III), (B) - (IV), (C) - (II), (D) - (I)
2. (A) - (III), (B) - (II), (C) - (IV), (D) - (I)
3. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
4. (A) - (I), (B) - (IV), (C) - (II), (D) - (III)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785072**
Option 1 ID : **2268953044357**
Option 2 ID : **2268953044358**
Option 3 ID : **2268953044359**
Option 4 ID : **2268953044360**
Status : **Answered**
Chosen Option : **3**

Q.43

Solution of $\frac{x^2-4x+7}{x^2-7x+12} \leq \frac{2}{3}$ is/are:

(A) $x \in [-3,1]$

(B) $x \in [3,4]$

(C) $x \in (1,3]$

(D) $x \in (3,4)$

Choose the correct answer from the options given below:

1. (A) and (B) only
2. (A) and (C) only
3. (A) and (D) only
4. (C) and (D) only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785054**
Option 1 ID : **2268953044285**
Option 2 ID : **2268953044286**
Option 3 ID : **2268953044287**
Option 4 ID : **2268953044288**
Status : **Answered**
Chosen Option : **2**

**Q.44**

If a machine is correctly set up, it produces 80% acceptable items. If it is incorrectly set up, it produces only 30% acceptable items. From the past experience if was known that 90% of the setups are correctly done. If after a certain setup, the machine produces 2 acceptable items then the probability that the machine was correctly set up, is:

1. $\frac{1}{65}$
2. $\frac{72}{75}$
3. $\frac{64}{65}$
4. $\frac{3}{75}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785073**
Option 1 ID : **2268953044361**
Option 2 ID : **2268953044362**
Option 3 ID : **2268953044363**
Option 4 ID : **2268953044364**
Status : **Answered**
Chosen Option : **2**

Q.45

A line passes through (2, 1, 3) and (1, 2, -1), then

(A) Equation of the line is $\frac{x-2}{-1}=\frac{y-1}{1}=\frac{z-3}{-4}$.

(B) Equation of the line is $\frac{x+2}{-1}=\frac{y+1}{1}=\frac{z+3}{-4}$.

(C) Equation of the line is $\vec{r}=2\hat{\imath}+\hat{\jmath}+3\hat{k}+\lambda(\hat{\imath}-\hat{\jmath}+4\hat{k})$.

(D) Equation of the line is $\frac{x-1}{1}=\frac{y-2}{-1}=\frac{z+1}{4}$.

Choose the ***correct*** answer from the options given below:

1. (A), (B) and (D) only
2. (B) and (C) only
3. (A), (C) and (D) only
4. (C) and (D) only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785067**
Option 1 ID : **2268953044337**
Option 2 ID : **2268953044338**
Option 3 ID : **2268953044339**
Option 4 ID : **2268953044340**
Status : **Answered**
Chosen Option : **2**

**Q.46**

The probability of drawing a one-rupee coin from a purse with two compartments, one of which contains 3 fifty paise coins and 2 one-rupee coins and other contains 2 fifty paise coins and 3 one-rupee coins, is

1. $\frac{1}{2}$
2. $\frac{2}{5}$
3. $\frac{1}{5}$
4. $\frac{3}{5}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785071**
Option 1 ID : **2268953044353**
Option 2 ID : **2268953044354**
Option 3 ID : **2268953044355**
Option 4 ID : **2268953044356**
Status : **Answered**
Chosen Option : **2**

**Q.47**

The function $f(x) = \sum_{k=1}^{7}(x-k)^2$ has minimum value at $x = a$, then $a$ is equal to:

1. 2
2. 3/2
3. 4
4. 3/4

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785053**
Option 1 ID : **2268953044281**
Option 2 ID : **2268953044282**
Option 3 ID : **2268953044283**
Option 4 ID : **2268953044284**
Status : **Answered**
Chosen Option : **2**

Q.48

$\int_{-2}^{2} \frac{x^4}{1+5^x} dx$ is equal to

1. $0$
2. $\frac{4}{3}$
3. $\frac{32}{5}$
4. $\frac{64}{5}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785056**
Option 1 ID : **2268953044293**
Option 2 ID : **2268953044294**
Option 3 ID : **2268953044295**
Option 4 ID : **2268953044296**
Status : **Answered**
Chosen Option : **2**

Q.49

If $A = \begin{bmatrix} cos\alpha & sin\alpha \\ -sin\alpha & cos\alpha \end{bmatrix}$, then $A^2 - (2\cos\alpha)A$ is equal to:

(Where I is identity matrix of order 2)

1. $A$
2. $-A$
3. $2A + I$
4. $-I$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785045**
Option 1 ID : **2268953044249**
Option 2 ID : **2268953044250**
Option 3 ID : **2268953044251**
Option 4 ID : **2268953044252**
Status : **Answered**
Chosen Option : **2**

**Q.50**

If $y = \frac{x^2}{1+x^{b-a}+x^{c-a}} + \frac{x^2}{1+x^{a-b}+x^{c-b}} + \frac{x^2}{1+x^{a-c}+x^{b-c}}$, then $\frac{dy}{dx}$ is

1. $1$
2. $2x$
3. $x^a + x^b + x^c$
4. $\frac{1}{x^a + x^b + x^c}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785049**
Option 1 ID : **2268953044265**
Option 2 ID : **2268953044266**
Option 3 ID : **2268953044267**
Option 4 ID : **2268953044268**
Status : **Answered**
Chosen Option : **2**

Section : **Mathematics Section B2 Applied**

**Q.51**

A firm anticipates an expenditure of ₹ 5,00,000 for plant modernization at the end of 10 years from now, then the amount the company should deposit at the end of each year into a sinking fund earning interest 5% per annum is [use $(1.05)^{10} = 1.629$]

1. ₹ 39,745.63
2. ₹ 29,754.23
3. ₹ 40,000.23
4. ₹ 37,951.63

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785105**
Option 1 ID : **2268953044489**
Option 2 ID : **2268953044490**
Option 3 ID : **2268953044491**
Option 4 ID : **2268953044492**
Status : **Not Answered**
Chosen Option : **--**

**Q.52**

A function $f(x)$ is given by, $f(x) = 12x^{4/3} - 6x^{1/3}$ , $x \in [-1,1]$ then which of the following are TRUE?

(A) $f(x)$ has a critical point $x = \frac{1}{8}$.

(B) Absolute maximum value of $f(x)$ is 18.

(C) Absolute maximum value of $f(x)$ is 6.

(D) Absolute minimum value of $f(x)$ is $-\frac{9}{4}$.

Choose the ***correct*** answer from the options given below:

1. (A), (C) and (D) only
2. (A) and (B) only
3. (A), (B) and (D) only
4. (C) and (D) only

**Options** 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785088**
Option 1 ID : **2268953044421**
Option 2 ID : **2268953044422**
Option 3 ID : **2268953044423**
Option 4 ID : **2268953044424**
Status : **Not Answered**
Chosen Option : **--**

**Q.53**

$M$ is a square matrix of order 3. If $M(adjM) = \begin{bmatrix} 5 & 0 & 0 \\ 0 & 5 & 0 \\ 0 & 0 & 5 \end{bmatrix}$, then the value of $|M| + |adj\, M|$ is equal to

1. 125
2. 30
3. 25
4. 50

**Options** 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785086**
Option 1 ID : **2268953044413**
Option 2 ID : **2268953044414**
Option 3 ID : **2268953044415**
Option 4 ID : **2268953044416**
Status : **Not Answered**
Chosen Option : **--**

**Q.54**

Mr. Sanjay borrowed ₹ 10,00,000 from a bank to purchase a car on reducing balance payment for period of 10 year. If bank charges interest at 9% per annum compounded monthly and EMI as ₹ 12,668 to be paid by him. Then principal outstanding after payment of 12$^{th}$ EMI is: (Use $(1.0075)^{-108} = 0.4462$)

1. ₹ 9,54,898
2. ₹ 9,35,405
3. ₹ 8,87,410
4. ₹ 9,39,486

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785108**
Option 1 ID : **2268953044501**
Option 2 ID : **2268953044502**
Option 3 ID : **2268953044503**
Option 4 ID : **2268953044504**
Status : **Not Answered**
Chosen Option : **--**

**Q.55**

A measurable characteristic of a sample is known as :

1. Parameter
2. Statistic
3. Hypothesis
4. Margin of error

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785101**
Option 1 ID : **2268953044473**
Option 2 ID : **2268953044474**
Option 3 ID : **2268953044475**
Option 4 ID : **2268953044476**
Status : **Not Answered**
Chosen Option : **--**

**Q.56**

If A and B are non-singular square matrices of order n, then

[Where I is an identity matrix of order n]

Match **List-I** with **List-II**

| List-I | List-II |
|---|---|
| (A) $\lvert (A^T)^{-1} \rvert$ | (I) adj A |
| (B) adj(AB) | (II) $\frac{1}{\lvert A \rvert}$ |
| (C) A (adj A) | (III) $\lvert A \rvert I_n$ |
| (D) $A^{-1} \lvert A \rvert$ | (IV) adj B . adj A |

Choose the **correct** answer from the options given below:

1. (A) - (III), (B) - (IV), (C) - (II), (D) - (I)
2. (A) - (III), (B) - (I), (C) - (IV), (D) - (II)
3. (A) - (II), (B) - (IV), (C) - (III), (D) - (I)
4. (A) - (II), (B) - (I), (C) - (III), (D) - (IV)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785085**
Option 1 ID : **2268953044409**
Option 2 ID : **2268953044410**
Option 3 ID : **2268953044411**
Option 4 ID : **2268953044412**
Status : **Not Answered**
Chosen Option : **--**

**Q.57**

A container contains 100 litres of apple juice. From this container, 10 litres of apple juice was taken out and replaced by equal amount of water. This process was further repeated twice. How much apple juice is left in the container?

1. 72.9 litres
2. 75.2 litres
3. 63.5 litres
4. 54.6 litres

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785091**
Option 1 ID : **2268953044433**
Option 2 ID : **2268953044434**
Option 3 ID : **2268953044435**
Option 4 ID : **2268953044436**
Status : **Not Answered**
Chosen Option : **--**

**Q.58**

The probability of a girl hitting a target is 1/2. How many times must she fire so that the probability of hitting the target at least once is more than 90%?

1. 2
2. 4
3. 5
4. 3

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785102**
Option 1 ID : **2268953044477**
Option 2 ID : **2268953044478**
Option 3 ID : **2268953044479**
Option 4 ID : **2268953044480**
Status : **Not Answered**
Chosen Option : **--**

**Q.59**

The remainder, when $2^{100}$ is divided by 11, is :

1. 2
2. 1
3. 3
4. 5

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785083**
Option 1 ID : **2268953044401**
Option 2 ID : **2268953044402**
Option 3 ID : **2268953044403**
Option 4 ID : **2268953044404**
Status : **Not Answered**
Chosen Option : **--**

**Q.60**

If a girl takes twice as long as to row a distance against the stream as to row the same distance in the direction of the stream, then the ratio of speed of the girl in still water to the speed of stream is :

1. 2 : 1
2. 3 : 1
3. 4 : 1
4. 3 : 2

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785093**
Option 1 ID : **2268953044441**
Option 2 ID : **2268953044442**
Option 3 ID : **2268953044443**
Option 4 ID : **2268953044444**
Status : **Not Answered**
Chosen Option : **--**

**Q.61**

The area bounded by curves $y = -\frac{2}{3}x + 2$, $x = -1$, $x = 2$ and the $x$-axis is :

1. $\frac{2}{3}$ square units
2. 5 square units
3. 3 square units
4. $\frac{13}{3}$ square units

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785079**
Option 1 ID : **2268953044385**
Option 2 ID : **2268953044386**
Option 3 ID : **2268953044387**
Option 4 ID : **2268953044388**
Status : **Not Answered**
Chosen Option : **--**

Q.62

If $\begin{bmatrix}1 & -4\\3 & -2\end{bmatrix}A=\begin{bmatrix}-16 & -6\\7 & 2\end{bmatrix}$, then the matrix $A$ is

1. $\begin{bmatrix}6 & 2\\11/2 & 2\end{bmatrix}$

2. $\begin{bmatrix}-1/5 & 2/5\\-3/10 & 1/10\end{bmatrix}$

3. $\begin{bmatrix}2 & 6\\11 & 3\end{bmatrix}$

4. $\begin{bmatrix}3 & 2\\6 & 5\end{bmatrix}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785077**
Option 1 ID : **2268953044377**
Option 2 ID : **2268953044378**
Option 3 ID : **2268953044379**
Option 4 ID : **2268953044380**
Status : **Not Answered**
Chosen Option : **--**

**Q.63**

Which of the following statements are correct in reference to the linear programming problem (LPP)

Maximise Z = 50x +40 y

Subject to the constraints: 1000x + 1200y ≤ 7600, x, y ≥ 0, 3x + 2y ≤ 18.

(A) The LPP has a unique optimal solution at (4, 3) only.

(B) The feasible region is bounded.

(C) The maximum value is unique, but there are an infinite number of optimal solutions.

(D) The feasible region is bounded with corner points (0, 0), (6, 0), (4, 3) and (0, 19/3).

Choose the ***correct*** answer from the options given below:

1. (A), (B), (C) and (D)
2. (A), (B) and (C) only
3. (A) and (D) only
4. (A), (B) and (D) only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785096**
Option 1 ID : **2268953044453**
Option 2 ID : **2268953044454**
Option 3 ID : **2268953044455**
Option 4 ID : **2268953044456**
Status : **Not Answered**
Chosen Option : **--**

**Q.64**

The present value of a perpetuity of ₹ 7500 payable at the end of each year, if money is worth 5% compounded annually is

1. ₹ 1,57,500
2. ₹ 95,000
3. ₹ 1,50,000
4. ₹ 1,75,000

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785107**
Option 1 ID : **2268953044497**
Option 2 ID : **2268953044498**
Option 3 ID : **2268953044499**
Option 4 ID : **2268953044500**
Status : **Not Answered**
Chosen Option : **--**

**Q.65**

Consider the following hypothesis test

$H_o: \mu = 18$

$H_a: \mu \neq 18$

A sample of 81 provided a sample mean $\bar{x} = 17$ and a population standard deviation S = 4.5. The value of test statistic and degree of freedom are

1. t = -1.7 , degree of freedom = 16
2. t = - 4.5 , degree of freedom = 17
3. t = -2 , degree of freedom = 80
4. t = -1.54 , degree of freedom = 48

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785104**
Option 1 ID : **2268953044485**
Option 2 ID : **2268953044486**
Option 3 ID : **2268953044487**
Option 4 ID : **2268953044488**
Status : **Not Answered**
Chosen Option : **--**

**Q.66**

In a game, A can give 20 points to B, A can give 32 points to C and B can give 15 points to C. How many points make the game?

1. 80
2. 70
3. 100
4. 60

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785092**
Option 1 ID : **2268953044437**
Option 2 ID : **2268953044438**
Option 3 ID : **2268953044439**
Option 4 ID : **2268953044440**
Status : **Not Answered**
Chosen Option : **--**

**Q.67**

Which of the following are the methods of measuring trends of time series?

(A) Graphical method

(B) Method of least squares

(C) Method of cyclic component

(D) Moving averages method

Choose the ***correct*** answer from the options given below:

1. (A) and (B) only
2. (A), (B), (C) and (D)
3. (A), (B) and (C) only
4. (A), (B) and (D) only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785082**
Option 1 ID : **2268953044397**
Option 2 ID : **2268953044398**
Option 3 ID : **2268953044399**
Option 4 ID : **2268953044400**
Status : **Not Answered**
Chosen Option : **--**

**Q.68**

For a function $f(x) = -x^2 - 2x + 30$, which of the following statements are TRUE?

(A) $f(x)$ is increasing on $(-\infty, -1)$

(B) $f(x)$ is increasing on $(-1, \infty)$

(C) $f(x)$ is decreasing on $(-\infty, -1)$

(D) $f(x)$ is decreasing on $(-1, \infty)$

Choose the ***correct*** answer from the options given below:

1. (B) and (D) only
2. (B) and (C) only
3. (A) and (C) only
4. (A) and (D only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785084**
Option 1 ID : **2268953044405**
Option 2 ID : **2268953044406**
Option 3 ID : **2268953044407**
Option 4 ID : **2268953044408**
Status : **Not Answered**
Chosen Option : **--**

**Q.69**

A die is thrown again and again untill three 5's are obtained. The probability of obtaining the third 5 in the seventh throw of the die is:

1. $\frac{3125}{93312}$
2. $\frac{625}{31104}$
3. $\frac{625}{93312}$
4. $\frac{6250}{93312}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785098**
Option 1 ID : **2268953044461**
Option 2 ID : **2268953044462**
Option 3 ID : **2268953044463**
Option 4 ID : **2268953044464**
Status : **Not Answered**
Chosen Option : **--**

Q.70

Match **List-I** with **List-II**

| **List-I**<br>**Determinant** | **List-II**<br>**Value** |
|---|---|
| (A) $\begin{vmatrix} 6 & 2 \\ 4 & 3 \end{vmatrix} =$ | (I) 0 |
| (B) $\begin{vmatrix} x & x+1 \\ x-1 & x \end{vmatrix} =$ | (II) -1 |
| (C) $\begin{vmatrix} 1 & \log_a b \\ \log_b a & 1 \end{vmatrix} =$ | (III) 10 |
| (D) $\begin{vmatrix} x-1 & 1 \\ x^3 & x^2+x+1 \end{vmatrix} =$ | (IV) 1 |

Choose the **correct** answer from the options given below:

1. (A) - (II), (B) - (I), (C) - (IV), (D) - (III)
2. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)
3. (A) - (IV), (B) - (I), (C) - (III), (D) - (II)
4. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)

**Options**
1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785076**
Option 1 ID : **2268953044373**
Option 2 ID : **2268953044374**
Option 3 ID : **2268953044375**
Option 4 ID : **2268953044376**
Status : **Not Answered**
Chosen Option : **--**

**Q.71**

For any square matrix A, $A - A^T$ is always

1. A null matrix
2. A symmetric matrix
3. A skew-symmetric matrix
4. An identity matrix

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785075**
Option 1 ID : **2268953044369**
Option 2 ID : **2268953044370**
Option 3 ID : **2268953044371**
Option 4 ID : **2268953044372**
Status : **Not Answered**
Chosen Option : **--**

**Q.72**

Water is leaking from bottom of a conical funnel at the rate of $0.15\pi\ cm^3/s$ . If the radius of the base of the funnel is 10 cm and its height is 20 cm then the rate at which the water level is dropping when it is 5 cm from the top is :

1. $\frac{1}{375} cm/s$
2. $3.75 cm/s$
3. $\frac{1}{275} cm/s$
4. $2.75 cm/s$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785094**
Option 1 ID : **2268953044445**
Option 2 ID : **2268953044446**
Option 3 ID : **2268953044447**
Option 4 ID : **2268953044448**
Status : **Not Answered**
Chosen Option : **--**

**Q.73**

Mr. X has two investment options, option A, either 8% annum compounded semi annually or option B 7.6% per annum compounded quarterly. Then which of the following are TRUE?

(A) Effective rate for option A is 8.16%

(B) Effective rate for option B is 7.82%

(C) Effective rate for option B is 8.82%

(D) Option A is better than option B as investment.

Choose the correct answer from the options given below:

1. (A), (B) and (D) only
2. (A) and (C) only
3. (B) and (D) only
4. (A) and (D) only

**Options**

1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785089**
Option 1 ID : **2268953044425**
Option 2 ID : **2268953044426**
Option 3 ID : **2268953044427**
Option 4 ID : **2268953044428**
Status : **Not Answered**
Chosen Option : **--**

Q.74

$\int \frac{x^5}{\sqrt{1+x^3}}\,dx$ is equal to :

1. $\frac{2}{3}(1+x^3)^{3/2}+\frac{1}{3}(1+x^3)^{1/2}+C$ , where $C$ is an arbitrary constant.

2. $\frac{2}{9}(1+x^3)^{1/2}-\frac{2}{3}(1+x^3)^{\frac{3}{2}}+C$ , where $C$ is an arbitrary constant.

3. $\frac{2}{3}(1+x^3)^{3/2}-\frac{1}{3}(1+x^3)^{\frac{1}{2}}+C$ , where $C$ is an arbitrary constant.

4. $\frac{2}{9}(1+x^3)^{3/2}-\frac{2}{3}(1+x^3)^{\frac{1}{2}}+C$ , where $C$ is an arbitrary constant.

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785080**
Option 1 ID : **2268953044389**
Option 2 ID : **2268953044390**
Option 3 ID : **2268953044391**
Option 4 ID : **2268953044392**
Status : **Not Answered**
Chosen Option : **--**

Q.75

Math **List-I** with **List-II**

| List-I | List-II |
|---|---|
| (A) The mean of the Binomial distribution $B\left(10,\frac{1}{5}\right)$ is | (I) 1.6 |
| (B) The Variance of the Binomial distribution $B\left(12,\frac{1}{2}\right)$ is | (II) 10 |
| (C) The standard deviation of the Binomial distribution $B\left(16,\frac{1}{5}\right)$ is | (III) 2 |
| (D) The mean of the Binomial distribution $B\left(25,\frac{2}{5}\right)$ is | (IV) 3 |

Choose the correct answer from the options given below:

1. (A) - (IV), (B) - (II), (C) - (I), (D) - (III)
2. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)
3. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
4. (A) - (II), (B) - (IV), (C) - (I), (D) - (III)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785100**
Option 1 ID : **2268953044469**
Option 2 ID : **2268953044470**
Option 3 ID : **2268953044471**
Option 4 ID : **2268953044472**
Status : **Not Answered**
Chosen Option : **--**

Q.76

Solution set of the linear inequation $\frac{3}{x-2} < 1$ is :

1. (2, 5]
2. (2, 5)
3. $(-\infty, 2) \cup [5, \infty)$
4. $(-\infty, 2) \cup (5, \infty)$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785090**
Option 1 ID : **2268953044429**
Option 2 ID : **2268953044430**
Option 3 ID : **2268953044431**
Option 4 ID : **2268953044432**
Status : **Not Answered**
Chosen Option : **--**

**Q.77**

The second order derivative of which of the following functions is $20^x$ ?

1. $\frac{20^x}{(\log_e 20)^2}$

2. $20^x(\log_e 20)^2$

3. $20^x(\log_e 20)$

4. $\frac{20^x}{\log_e 20}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785078**
Option 1 ID : **2268953044381**
Option 2 ID : **2268953044382**
Option 3 ID : **2268953044383**
Option 4 ID : **2268953044384**
Status : **Not Answered**
Chosen Option : **--**

**Q.78**

A cab hire firm has two cabs, which it hires out day by day. The number of demands for cabs on each day is distributed as a Poisson distribution with mean of 1.5, then the probability of days on which neither cab is used is (Use $e^{-1.5}$ = 0.2231)

1. 0.1353
2. 0.2231
3. 0.7231
4. 0.018

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785099**
Option 1 ID : **2268953044465**
Option 2 ID : **2268953044466**
Option 3 ID : **2268953044467**
Option 4 ID : **2268953044468**
Status : **Not Answered**
Chosen Option : **--**

Q.79

The order of the differential equation $\left(\frac{d^5y}{dx^5}\right)^2 + e^{\frac{dy}{dx}} + y^2 = 0$ is :

1. 1
2. Not defined
3. 5
4. 2

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785081**
Option 1 ID : **2268953044393**
Option 2 ID : **2268953044394**
Option 3 ID : **2268953044395**
Option 4 ID : **2268953044396**
Status : **Not Answered**
Chosen Option : **--**

Q.80

A TV set costing ₹ 55,000 has a useful life of 8 years. If annual depreciation is ₹ 5,000, then the scrap value by straight line method is

1. ₹ 5,000
2. ₹ 20,000
3. ₹ 10,000
4. ₹ 15,000

Options 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785109**
Option 1 ID : **2268953044505**
Option 2 ID : **2268953044506**
Option 3 ID : **2268953044507**
Option 4 ID : **2268953044508**
Status : **Not Answered**
Chosen Option : **--**

**Q.81**

A pump can fill a tank with water in 2 hours. Because of a leak, it took $2\frac{1}{3}$ hours to fil the tank. In how many hours the leak can drain all the water of the tank?

1. 14 hours
2. $\frac{7}{3}$ hours
3. $\frac{3}{7}$ hours
4. 7 hours

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785087**
Option 1 ID : **2268953044417**
Option 2 ID : **2268953044418**
Option 3 ID : **2268953044419**
Option 4 ID : **2268953044420**
Status : **Not Answered**
Chosen Option : **--**

**Q.82**

For the given 5 values, 35, 70, 30, 62, 58, the 3-year moving averages are

1. 45, 55, 50
2. 40, 54, 60
3. 55, 60, 65
4. 45, 54, 50

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785097**
Option 1 ID : **2268953044457**
Option 2 ID : **2268953044458**
Option 3 ID : **2268953044459**
Option 4 ID : **2268953044460**
Status : **Not Answered**
Chosen Option : **--**

**Q.83**

A simple random sample consists of five observations: 4, 5, 9, 10 & 12. What is the point estimate of population standard deviation?

1. 3.4
2. 3
3. 4.4
4. 5.2

**Options** 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785103**
Option 1 ID : **2268953044481**
Option 2 ID : **2268953044482**
Option 3 ID : **2268953044483**
Option 4 ID : **2268953044484**
Status : **Not Answered**
Chosen Option : **--**

Q.84

Match **List-I** with **List-II**

| **List-I** | **List-II** |
|---|---|
| (A) In an linear programming problem (LPP), the linear inequalities or restrictions on the variables are called. | (I). Feasible Region |
| (B) In an LPP, the linear function which has to be maximised or minimised is called a | (II) Convex set |
| (C) The common region determined by all the linear constraints of an LPP is called | (III) Linear objective function |
| (D) The feasible region, for an LPP is always a | (IV) Linear Constraints |

Choose the ***correct*** answer from the options given below:

1. (A) - (II), (B) - (IV), (C) - (I), (D) - (III)
2. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
3. (A) - (III), (B) - (IV), (C) - (II), (D) - (I)
4. (A) - (IV), (B) - (III), (C) - (I), (D) - (II)

**Options** 1. 1

2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785095**
Option 1 ID : **2268953044449**
Option 2 ID : **2268953044450**
Option 3 ID : **2268953044451**
Option 4 ID : **2268953044452**
Status : **Not Answered**
Chosen Option : **--**

**Q.85**

Suppose a person invested ₹ 15,000 in a mutual fund and the value of the investment at the time of redemption was ₹ 25,000. If CAGR % for this investment is 8.88%, then the number of years for which he has invested the amount is [ use : log 1.667 = 0.2219 ; log 1.089 = 0.0370]

1. 2
2. 4
3. 7
4. 6

**Options** 1. 1
2. 2
3. 3
4. 4

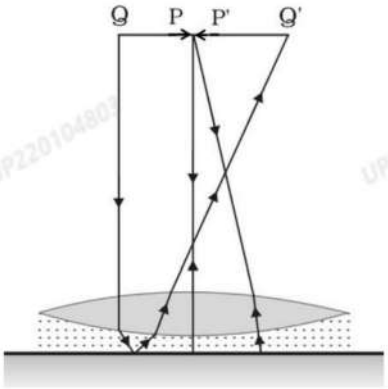
Question Type : **MCQ**
Question ID : **226895785106**
Option 1 ID : **2268953044493**
Option 2 ID : **2268953044494**
Option 3 ID : **2268953044495**
Option 4 ID : **2268953044496**
Status : **Not Answered**
Chosen Option : **--**

Section : **Physics**

**Q.1**

The figure below shows an equiconvex lens (n = 1.5) placed in contact with a thin liquid layer resting on a plane mirror. A small needle, with its tip positioned on the principal axis of the lens, is moved along the axis until its inverted image coincides with the needle tip itself.

When the liquid is present, the distance between the needle and the lens is found to be 50 cm. The experiment is then repeated after removing the liquid, and the distance is observed to be 35 cm. The refractive index of the liquid is-




1. 1.33
2. 1.30
3. 1.50
4. 1.41

**Options** 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785146**
Option 1 ID : **2268953044653**
Option 2 ID : **2268953044654**
Option 3 ID : **2268953044655**
Option 4 ID : **2268953044656**
Status : **Answered**
Chosen Option : **2**

Q.2

Match **List-I** with **List-II (Symbols have their usual meaning)**

| List-I | List-II |
|---|---|
| (A) Magnetic field due to an infinitely long straight conductor | (I) $BIl \sin\theta$ |
| (B) Magnetic field due to a circular coil at the center | (II) $BIA \sin\theta$ |
| (C) Force on a current carrying conductor in a magnetic field | (III) $\frac{\mu_0 I}{2\pi r}$ |
| (D) Torque on a current loop in a magnetic field | (IV) $\frac{\mu_0 I}{2r}$ |

Choose the **correct** answer from the options given below:

1. (A) - (IV), (B) - (II), (C) - (III), (D) - (I)
2. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
3. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

**Options** 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785123**
Option 1 ID : **2268953044561**
Option 2 ID : **2268953044562**
Option 3 ID : **2268953044563**
Option 4 ID : **2268953044564**
Status : **Answered**
Chosen Option : **4**

Q.3

According to Bohr's model of the hydrogen atom,

(A) the radius of the orbit of an electron is directly proportional to n.

(B) the speed of the orbiting electron is directly proportional to 1/n

(C) the total energy of the electron is directly proportional to $1/n^2$

(D) the radius of the orbit of an electron is directly proportional to $n^2$

Choose the ***correct*** answer from the options given below:

1. (A), (B) and (C) only
2. (B), (C) and (D) only
3. (A), (C) and (D) only
4. (C) and (D) only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785152**
Option 1 ID : **2268953044677**
Option 2 ID : **2268953044678**
Option 3 ID : **2268953044679**
Option 4 ID : **2268953044680**
Status : **Answered**
Chosen Option : **1**

**Q.4**

An alternating current is given by the equation, $i = i_1 \sin wt + i_2 \cos wt$.

The $i_{rms}$ will be;

1. $\frac{1}{\sqrt{2}}(i_1 + i_2)$
2. $\frac{1}{\sqrt{2}}\left(i_1^2 + i_2^2\right)$
3. $\frac{1}{\sqrt{2}}(i_1 + i_2)^2$
4. $\frac{1}{\sqrt{2}}\left(i_1^2 + i_2^2\right)^{\frac{1}{2}}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785134**
Option 1 ID : **2268953044605**
Option 2 ID : **2268953044606**
Option 3 ID : **2268953044607**
Option 4 ID : **2268953044608**
Status : **Answered**
Chosen Option : **4**

**Q.5**

A horizontal wire of length 10 cm and mass 0.3 g carries a current of 5 A. The magnitude of the magnetic field which can keep the wire in suspension is

(Take: g = 10 m/s$^2$)

1. $3 \times 10^{-3}$ T
2. $6 \times 10^{-3}$ T
3. $3 \times 10^{-4}$ T
4. $6 \times 10^{-4}$ T

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785126**
Option 1 ID : **2268953044573**
Option 2 ID : **2268953044574**
Option 3 ID : **2268953044575**
Option 4 ID : **2268953044576**
Status : **Answered**
Chosen Option : **2**

Q.6

Arrange the following in increasing order of focal length of a given lens.

(A) $f_V$- focal length for violet colour

(B) $f_B$- focal length for blue colour

(C) $f_Y$- focal length for yellow colour

(D) $f_R$- focal length for red colour

Choose the **correct** answer from the options given below:

1. (A), (B), (C), (D)
2. (A), (B), (D), (C)
3. (C), (D), (B), (A)
4. (D), (C), (B), (A)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785142**
Option 1 ID : **2268953044637**
Option 2 ID : **2268953044638**
Option 3 ID : **2268953044639**
Option 4 ID : **2268953044640**
Status : **Answered**
Chosen Option : **1**

Q.7

Light is incident on an interface between water (refractive index = 1.33) and glass (refractive index = 1.5). For total internal reflection, light should be traveling from

($i_c$ is the critical angle)

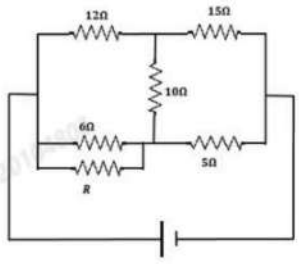
1. water to glass with an angle of incidence $i > i_c$
2. glass to water with an angle of incidence $i > i_c$
3. water to glass with an angle of incidence $i < i_c$
4. glass to water with an angle of incidence $i < i_c$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785141**
Option 1 ID : **2268953044633**
Option 2 ID : **2268953044634**
Option 3 ID : **2268953044635**
Option 4 ID : **2268953044636**
Status : **Answered**
Chosen Option : **2**

**Q.8**

The value of R in the given circuit, so that there is no current flow in the 10 Ω resistor, will be




1. 2 Ω
2. 4 Ω
3. 8 Ω
4. 12 Ω

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785119**
Option 1 ID : **2268953044545**
Option 2 ID : **2268953044546**
Option 3 ID : **2268953044547**
Option 4 ID : **2268953044548**
Status : **Answered**
Chosen Option : **4**

**Q.9**

A charge 'q' coulomb is circulating in an orbit of radius 'r' meters making n revolutions per sec. The magnetic field (in N/Am) produced at the center of circle is

1. $\frac{2\pi q}{nr} \times 10^{-7}$
2. $\frac{2\pi q}{r} \times 10^{-7}$
3. $\frac{2\pi nq}{r} \times 10^{-7}$
4. $\frac{2\pi rn}{q} \times 10^{-7}$

**Options** 1. 1
2. 2
3. 3
4. 4

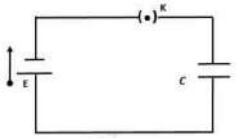
Question Type : **MCQ**
Question ID : **226895785128**
Option 1 ID : **2268953044581**
Option 2 ID : **2268953044582**
Option 3 ID : **2268953044583**
Option 4 ID : **2268953044584**
Status : **Answered**
Chosen Option : **2**

**Q.10**

A parallel plate capacitor (C) is connected to a battery as shown in figure. Consider two cases:

Case-I: key 'k' is kept closed and plates of capacitors are moved apart using insulating handle.

Case-II: Initially key 'k' is closed for a long time and then opened. Now,the plates of capacitors are moved apart using insulating handle. Then, identify the correct statements among the following.




(A) In case-I: Q remains same but C changes.

(B) In case-II : V remains same but C changes.

(C) In case-I : V remains same and hence Q changes.

(D) In case-II: Q remains same and hence V changes.

Choose the ***correct*** answer from the options given below:

1. (A) and (B) only
2. (C) and (D) only
3. (B) and (C) only
4. (A) and (D only

**Options** 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785115**
Option 1 ID : **2268953044529**
Option 2 ID : **2268953044530**
Option 3 ID : **2268953044531**
Option 4 ID : **2268953044532**
Status : **Answered**
Chosen Option : **2**

**Q.11**

The ratio of maximum wavelength to minimum wavelength in Balmer series is

1. $\frac{4}{3}$
2. $\frac{3}{4}$
3. $\frac{9}{5}$
4. $\frac{5}{9}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785153**
Option 1 ID : **2268953044681**
Option 2 ID : **2268953044682**
Option 3 ID : **2268953044683**
Option 4 ID : **2268953044684**
Status : **Answered**
Chosen Option : **3**

**Q.12**

When a magnet is inserted into a coil, the induced e.m.f. in the coil **does not** depend on -

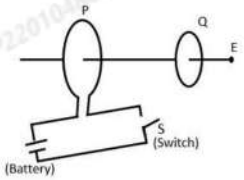
1. the number of turns in the coil.
2. the resistance of the coil.
3. the magnetic moment of the magnet.
4. the speed of the magnet.

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785129**
Option 1 ID : **2268953044585**
Option 2 ID : **2268953044586**
Option 3 ID : **2268953044587**
Option 4 ID : **2268953044588**
Status : **Answered**
Chosen Option : **2**

**Q.13**

As shown in the figure, P and Q are two coaxial conducting loops separated by some distance. when the switch S is closed, a clockwise current $I_P$ flows in P (as seen by E) and an induced current $I_{Q1}$ flows in Q. The switch remains closed for a long time. When S is opened, a current $I_{Q2}$ flows in Q. Then, the directions of $I_{Q1}$, and $I_{Q2}$ (as seen by E) are




1. clockwise and anti-clockwise, respectively
2. both clockwise
3. both anti-clockwise
4. anticlockwise and clockwise, respectively

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785131**
Option 1 ID : **2268953044593**
Option 2 ID : **2268953044594**
Option 3 ID : **2268953044595**
Option 4 ID : **2268953044596**
Status : **Answered**
Chosen Option : **2**

**Q.14**

Match **List-I** with **List-II in the context of Young's double slit experiment.**

| **List-I** | **List-II** |
|---|---|
| (A) Fringe width | (I) path difference = $\frac{(2n+1)\lambda}{2}$ ; n = 0, 1, 2,.. |
| (B) Condition for bright fringe in interference | (II) path difference = $n\lambda; n = 1, 2, 3, \ldots$ |
| (C) Condition for dark fringe in interference | (III) $\frac{\lambda D}{d}$ |
| (D) Condition for central maximum | (IV) path difference = 0 |

Choose the **correct** answer from the options given below:

1. (A) - (III), (B) - (IV), (C) - (II), (D) - (I)
2. (A) - (IV), (B) - (I), (C) - (III), (D) - (II)
3. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
4. (A) - (III), (B) - (II), (C) - (I), (D) - (IV)

**Options** 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785140**
Option 1 ID : **2268953044629**
Option 2 ID : **2268953044630**
Option 3 ID : **2268953044631**
Option 4 ID : **2268953044632**
Status : **Answered**
Chosen Option : **4**

**Q.15**

In a Young's double slit experiment using monochromatic light of wavelength $\lambda$, the intensity of light at a point on the screen is $I_0$, where the path difference between two interfering waves is $\lambda$. The path difference between the interfering waves at a point on the screen where the intensity is $\frac{I_0}{4}$ will be-

1. $\frac{\lambda}{4}$
2. $\frac{\lambda}{3}$
3. $\frac{3\lambda}{2}$
4. $2\lambda$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785144**
Option 1 ID : **2268953044645**
Option 2 ID : **2268953044646**
Option 3 ID : **2268953044647**
Option 4 ID : **2268953044648**
Status : **Answered**
Chosen Option : **2**

**Q.16**

Arrange the following media (characterised by their relative dielectric permittivities ($\varepsilon_r$) and relative magnetic permeabilities ($\mu_r$)) according to the velocity of an electromagnetic wave propagating in them in ascending order.

(A) $\varepsilon_r$ = 4 and $\mu_r$ = 400

(B) $\varepsilon_r$ = 3 and $\mu_r$ = 300

(C) $\varepsilon_r$ = 4 and $\mu_r$ = 250

(D) $\varepsilon_r$ = 5 and $\mu_r$ = 150

Choose the **correct** answer from the options given below:

1. (A), (C), (B), (D)
2. (C), (A), (B), (D)
3. (B), (A), (C), (D)
4. (A), (B), (C), (D)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785137**
Option 1 ID : **2268953044617**
Option 2 ID : **2268953044618**
Option 3 ID : **2268953044619**
Option 4 ID : **2268953044620**
Status : **Answered**
Chosen Option : **1**

**Q.17**

Taking Bohr's radius as $r_o$ = 53 pm, the ground state radius of $Li^{++}$ ion, on the basis of Bohr's model, will be about

1. 53 pm
2. 27 pm
3. 18 pm
4. 13 pm

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785154**
Option 1 ID : **2268953044685**
Option 2 ID : **2268953044686**
Option 3 ID : **2268953044687**
Option 4 ID : **2268953044688**
Status : **Answered**
Chosen Option : **3**

**Q.18**

A deuteron and an alpha particle with the same kinetic energy move in circular paths under the effect of same magnetic field. The ratio of the radii ($r_d : r_\alpha$) of their trajectories is

1. 1 : 1
2. 1:√2
3. √2:1
4. 2 : 1

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785125**
Option 1 ID : **2268953044569**
Option 2 ID : **2268953044570**
Option 3 ID : **2268953044571**
Option 4 ID : **2268953044572**
Status : **Answered**
Chosen Option : **2**

**Q.19**

A metal at very low temperature has magnetic permeability $\mu = 0$. It is a perfect

1. paramagnet
2. diamagnet
3. soft ferromagnet
4. hard ferromagnetic

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785127**
Option 1 ID : **2268953044577**
Option 2 ID : **2268953044578**
Option 3 ID : **2268953044579**
Option 4 ID : **2268953044580**
Status : **Answered**
Chosen Option : **1**

**Q.20**

The radius of curvature of the curved surface of a plano – convex lens is 20 cm. If the refractive index of the material of the lens is 1.5, it will

1. act as a convex lens only for the objects that lie on its curved side.
2. act as a concave lens for the objects that lie on its curved side.
3. act as a convex lens irrespective of the side on which the object lies
4. act as a concave lens irrespective of side on which the object lies

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785145**
Option 1 ID : **2268953044649**
Option 2 ID : **2268953044650**
Option 3 ID : **2268953044651**
Option 4 ID : **2268953044652**
Status : **Answered**
Chosen Option : **2**

**Q.21**

A proton accelerated through a potential difference V has a de-Broglie wavelength $\lambda$. On doubling the potential difference, the de-Broglie wavelength of the proton-

1. remains unchanged
2. becomes double
3. becomes 4 times
4. decreases by a factor of $1/\sqrt{2}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785147**
Option 1 ID : **2268953044657**
Option 2 ID : **2268953044658**
Option 3 ID : **2268953044659**
Option 4 ID : **2268953044660**
Status : **Answered**
Chosen Option : **4**

**Q.22**

Arrange the following in the correct order as the angle of incidence in a denser medium is gradually increased.

(A) The refracted ray bends away from the normal.

(B) The refracted ray grazes along the surface of separation.

(C) The light is totally reflected back into the denser medium.

(D) The ray passes undeviated when incident normally.

Choose the **correct** answer from the options given below:

1. (A), (D), (B), (C)
2. (D), (B), (A), (C)
3. (D), (A), (B), (C)
4. (A), (C), (B), (D)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785143**
Option 1 ID : **2268953044641**
Option 2 ID : **2268953044642**
Option 3 ID : **2268953044643**
Option 4 ID : **2268953044644**
Status : **Answered**
Chosen Option : **3**

**Q.23**

The source of electromagnetic waves can be

1. a charge moving with a constant velocity.
2. an accelerated charge.
3. a charge at rest.
4. a charge moving parallel to a magnetic field.

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785138**
Option 1 ID : **2268953044621**
Option 2 ID : **2268953044622**
Option 3 ID : **2268953044623**
Option 4 ID : **2268953044624**
Status : **Answered**
Chosen Option : **2**

**Q.24**

The kinetic energy of an electron in ground level in hydrogen atom is K units. The values of potential energy and total energy, respectively, are

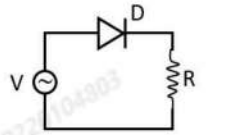
1. - 2K, - K
2. + 2K, - K
3. - K, + 2K
4. + K, + 2K

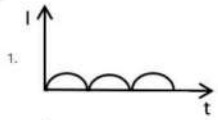
**Options** 1. 1
2. 2
3. 3
4. 4

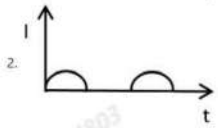
Question Type : **MCQ**
Question ID : **226895785150**
Option 1 ID : **2268953044669**
Option 2 ID : **2268953044670**
Option 3 ID : **2268953044671**
Option 4 ID : **2268953044672**
Status : **Answered**
Chosen Option : **1**

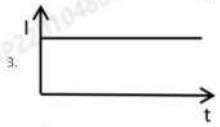
**Q.25**

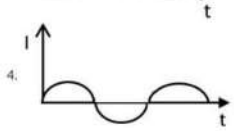
A p-n junction diode (D) shown in figure below can act as a rectifier. An alternating current source (V) is connected in the circuit. The current (I) in the resistor (R) can be shown by which graph?




1.



2.



3.



4.



**Options** 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785158**
Option 1 ID : **2268953044701**
Option 2 ID : **2268953044702**
Option 3 ID : **2268953044703**
Option 4 ID : **2268953044704**
Status : **Answered**
Chosen Option : **2**

**Q.26**

The oscillating electric and magnetic field vectors of electromagnetic wave are in-

1. the same direction and in phase
2. the same direction but have a phase difference of 90°.
3. mutually perpendicular directions and are in phase.
4. mutually perpendicular directions with a phase difference of 90°.

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785135**
Option 1 ID : **2268953044609**
Option 2 ID : **2268953044610**
Option 3 ID : **2268953044611**
Option 4 ID : **2268953044612**
Status : **Answered**
Chosen Option : **3**

**Q.27**

For a cell or a battery, the emf is

(A) equal to the potential difference between its terminals when terminals are not connected externally

(B) less than the potential difference between its terminals when the cell/battery is being discharged.

(C) always greater than the potential difference between its terminals.

(D) less than the potential difference between its terminals when the cell/battery is being charged.

Choose the ***correct*** answer from the options given below:

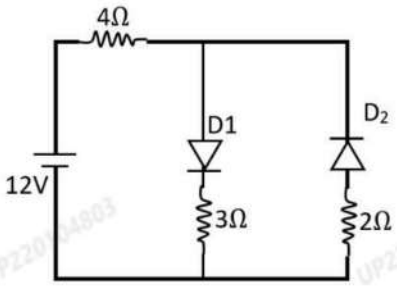
1. (A) and (D) only
2. (A) and (C) only
3. (C) only
4. (A), (B) and (C) only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785117**
Option 1 ID : **2268953044537**
Option 2 ID : **2268953044538**
Option 3 ID : **2268953044539**
Option 4 ID : **2268953044540**
Status : **Answered**
Chosen Option : **2**

**Q.28**

The circuit has two oppositely connected ideal diodes in parallel. The current flowing in the circuit will be




1. 2 A
2. 1.71 A
3. 2.31 A
4. 1.33 A

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785159**
Option 1 ID : **2268953044705**
Option 2 ID : **2268953044706**
Option 3 ID : **2268953044707**
Option 4 ID : **2268953044708**
Status : **Answered**
Chosen Option : **2**

**Q.29**

When a forward bias is applied to a p-n junction diode, then,

(A) majority carrier current becomes zero.

(B) potential barrier is raised.

(C) width of the depletion layer reduces.

(D) junction resistance increases.

Choose the ***correct*** answer from the options given below:

1. (A) and (C) only
2. (C) only
3. (B), (C) and (D) only
4. (B) and (C) only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785156**
Option 1 ID : **2268953044693**
Option 2 ID : **2268953044694**
Option 3 ID : **2268953044695**
Option 4 ID : **2268953044696**
Status : **Answered**
Chosen Option : **2**

**Q.30**

An electron beam has an aperture 2 $mm^2$. A total of $6.0 \times 10^{15}$ electrons pass through any perpendicular cross-section area per second. The current density of the beam is

1. $19.2 \times 10^{-10}$ $Am^{-2}$
2. $9.6 \times 10^{-4}$ $Am^{-2}$
3. $9.6 \times 10^{2}$ $Am^{-2}$
4. $4.8 \times 10^{2}$ $Am^{-2}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785120**
Option 1 ID : **2268953044549**
Option 2 ID : **2268953044550**
Option 3 ID : **2268953044551**
Option 4 ID : **2268953044552**
Status : **Answered**
Chosen Option : **4**

**Q.31**

A parallel plate capacitor is formed by two plates each of area $30\pi$ cm$^2$ separated by 1 mm. A material of dielectric strength $3.6 \times 10^7$ V/m is filled between the plates. If the maximum charge that can be stored in the capacitor without causing any dielectric breakdown is $7 \times 10^{-6}$ C, the value of dielectric constant of the material is

(Given: $\frac{1}{4\pi\varepsilon_0} = 9 \times 10^9$ Nm$^2$/C$^2$ )

1. 1.66
2. 1.75
3. 2.25
4. 2.33

**Options** 1. 1

2. 2

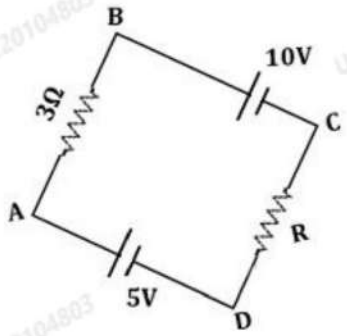
3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785116**
Option 1 ID : **2268953044533**
Option 2 ID : **2268953044534**
Option 3 ID : **2268953044535**
Option 4 ID : **2268953044536**
Status : **Answered**
Chosen Option : **2**

Q.32

In the given network, if $V_A - V_C = 8$ V, the value of R is




1. 3 Ω
2. 2.5 Ω
3. 4.5 Ω
4. 2 Ω

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785121**
Option 1 ID : **2268953044553**
Option 2 ID : **2268953044554**
Option 3 ID : **2268953044555**
Option 4 ID : **2268953044556**
Status : **Answered**
Chosen Option : **2**

**Q.33**

Two small insulating spheres are rubbed against each other and placed 1 cm apart. If they attract each other with a force, F = 0.1 N, the number of electrons that were transferred from one sphere to another during rubbing are nearly

1. $5 \times 10^{11}$
2. $2 \times 10^{11}$
3. $2 \times 10^{10}$
4. $1 \times 10^{12}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785114**
Option 1 ID : **2268953044525**
Option 2 ID : **2268953044526**
Option 3 ID : **2268953044527**
Option 4 ID : **2268953044528**
Status : **Answered**
Chosen Option : **2**

**Q.34**

Identify the correct statements with regard to the application of Gauss's law in electrostatics..

(A) Gauss's law is true only for spherical closed surfaces.

(B) The Gaussian surface should not pass through any discreet charges.

(C) The total electric flux through any closed surface is zero, if no charge is enclosed by the surface.

(D) The charge in the vicinity of the surface must be zero.

Choose the ***correct*** answer from the options given below:

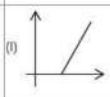
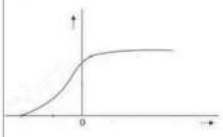
1. (B) only
2. (A) and (D) only
3. (B) and (C) only
4. (A) and (C) only

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785113**
Option 1 ID : **2268953044521**
Option 2 ID : **2268953044522**
Option 3 ID : **2268953044523**
Option 4 ID : **2268953044524**
Status : **Answered**
Chosen Option : **3**

**Q.35**

Match **List-I** with **List-II**

| List-I | List-II |
|---|---|
| (A) Variation of photoelectric current (Y-axis) with intensity (X-axis) of incident radiation. | (I)  |
| (B) Variation of stopping potential (Y-axis) with frequency (X-axis) of incident radiation. | (II)  |
| (C) Variation of photoelectric current (Y-axis) with anode potential (X-axis). | (III)  |
| (D) Variation of de-Broglie wavelength (Y-axis) with its particle momentum (X-axis). | (IV)  |

Choose the **correct** answer from the options given below:

1. (A) - (I), (B) - (III), (C) - (IV), (D) - (II)
2. (A) - (IV), (B) - (I), (C) - (II), (D) - (III)
3. (A) - (IV), (B) - (III), (C) - (II), (D) - (I)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

**Options** 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785148**
Option 1 ID : **2268953044661**
Option 2 ID : **2268953044662**
Option 3 ID : **2268953044663**
Option 4 ID : **2268953044664**
Status : **Answered**
Chosen Option : **2**

**Q.36**

Equipotential surfaces

1. are closer in regions of large electric fields compared to regions of lower electric fields.
2. are closer in regions of lower electric fields compared to regions of large electric fields.
3. will always be concentric spherical surfaces.
4. will always be equally spaced.

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785111**
Option 1 ID : **2268953044513**
Option 2 ID : **2268953044514**
Option 3 ID : **2268953044515**
Option 4 ID : **2268953044516**
Status : **Answered**
Chosen Option : **2**

**Q.37**

Nuclear forces are

1. Strong, short range and charge independent.
2. Attractive, long range and charge independent.
3. Strong, attractive and charge dependent.
4. Strong, short range and repulsive

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785151**
Option 1 ID : **2268953044673**
Option 2 ID : **2268953044674**
Option 3 ID : **2268953044675**
Option 4 ID : **2268953044676**
Status : **Answered**
Chosen Option : **1**

**Q.38**

Five cells, each of emf (E) and internal resistance (r), are connected in series. If out of these five cells, one of the cells is connected with opposite polarity, the equivalent emf and internal resistance of the combination, respectively, will be

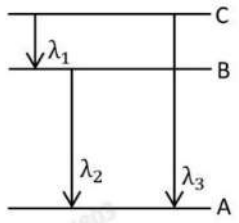
1. 5E, 5r
2. 4E, 4r
3. 3E, 5r
4. 3E, 3r

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785118**
Option 1 ID : **2268953044541**
Option 2 ID : **2268953044542**
Option 3 ID : **2268953044543**
Option 4 ID : **2268953044544**
Status : **Answered**
Chosen Option : **3**

**Q.39**

Energy levels A, B, C, of a certain atom correspond to increasing values of energy ($E_A < E_B < E_C$). if $\lambda_1$, $\lambda_2$ and $\lambda_3$ are the wavelengths of radiations corresponding to the transitions C to B, B to A and C to A respectively, the relation between these wavelengths can be written as-




1. $\lambda_3 = \lambda_1 + \lambda_2$
2. $\lambda_3 = \frac{\lambda_1 \lambda_2}{\lambda_1 + \lambda_2}$
3. $\lambda_1 + \lambda_2 + \lambda_3 = 0$
4. $\lambda^2_1 + \lambda^2_2 = \lambda^2_3$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785155**
Option 1 ID : **2268953044689**
Option 2 ID : **2268953044690**
Option 3 ID : **2268953044691**
Option 4 ID : **2268953044692**
Status : **Answered**
Chosen Option : **2**

**Q.40**

A magnetic dipole aligned parallel to a uniform magnetic field requires a work of W to rotate it through 60°. The torque exerted by the field on the dipole in this new position is

1. 2 W
2. W
3. √3 W
4. √3/2 W

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785124**
Option 1 ID : **2268953044565**
Option 2 ID : **2268953044566**
Option 3 ID : **2268953044567**
Option 4 ID : **2268953044568**
Status : **Answered**
Chosen Option : **3**

**Q.41**

An electron is found to repel another electron at a distance of 1 cm with a force $F = 2.3 \times 10^{-24}$ N. Two protons placed at a distance of 5 cm will

1. repel each other with a force $F = 2.3 \times 10^{-24}$ N
2. attract each other with a force $F = 2.3 \times 10^{-24}$ N
3. repel each other with a force $F = 9.2 \times 10^{-26}$ N
4. attract each other with a force $F = 4.6 \times 10^{-25}$ N

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785110**
Option 1 ID : **2268953044509**
Option 2 ID : **2268953044510**
Option 3 ID : **2268953044511**
Option 4 ID : **2268953044512**
Status : **Answered**
Chosen Option : **3**

Q.42

Match **List-I** with **List-II**

| **List-I (Physical quantity)** | **List-II (Dimensions)** |
|---|---|
| (A) Mutual inductance | (I) $[ML^2T^{-3}A^{-1}]$ |
| (B) Magnetic flux | (II) $[M^0T^0L^2A]$ |
| (C) EMF | (III) $ML^2T^{-2}A^{-1}$ |
| (D) Magnetic moment | (IV) $ML^2T^{-2}A^{-2}$ |

Choose the **correct** answer from the options given below:

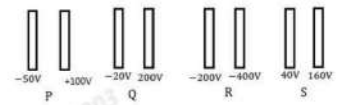
1. (A) - (IV), (B) - (III), (C) - (I), (D) - (II)
2. (A) - (I), (B) - (III), (C) - (IV), (D) - (II)
3. (A) - (IV), (B) - (II), (C) - (III), (D) - (I)
4. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)

**Options**
1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785130**
Option 1 ID : **2268953044589**
Option 2 ID : **2268953044590**
Option 3 ID : **2268953044591**
Option 4 ID : **2268953044592**
Status : **Answered**
Chosen Option : **1**

**Q.43**

Figures show four pairs, of parallel plates P, Q, R and S with the same separation and the electric potential of each plate. The electric field between the plates is uniform and perpendicular to the plates. Arrange the plates in descending order of the magnitude of the electric field between the plates.




(A) P

(B) Q

(C) R

(D) S

Choose the **correct** answer from the options given below:

1. (B), (C), (D), (A)
2. (A), (C), (B), (D)
3. (B), (C), (A), (D)
4. (C), (D), (A), (B)

**Options** 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785112**
Option 1 ID : **2268953044517**
Option 2 ID : **2268953044518**
Option 3 ID : **2268953044519**
Option 4 ID : **2268953044520**
Status : **Answered**
Chosen Option : **4**

**Q.44**

Arrange the following steps in the chronological order, when a charged particle enters perpendicularly into a uniform magnetic field.

(A) The charged particle starts moving in a circular path.

(B) Net work done by the field is zero.

(C) The speed of the charged particle remains constant but its direction changes.

(D) A force acts perpendicular to both the velocity of the charged particle and the magnetic field.

Choose the **correct** answer from the options given below:

1. (D), (A), (C), (B)
2. (A), (C), (D), (B)
3. (C), (A), (D), (B)
4. (A), (C), (B), (D)

**Options** 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785122**
Option 1 ID : **2268953044557**
Option 2 ID : **2268953044558**
Option 3 ID : **2268953044559**
Option 4 ID : **2268953044560**
Status : **Answered**
Chosen Option : **1**

**Q.45**

In a full wave rectifier circuit operating with 50 Hz mains frequency, the fundamental frequency in the ripple at the output would be

1. 25 Hz
2. 50 Hz
3. 75 Hz
4. 100 Hz

**Options** 1. 1

2. 2

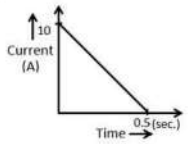
3. 3

4. 4

Question Type : **MCQ**
Question ID : **226895785157**
Option 1 ID : **2268953044697**
Option 2 ID : **2268953044698**
Option 3 ID : **2268953044699**
Option 4 ID : **2268953044700**
Status : **Answered**
Chosen Option : **4**

**Q.46**

In a coil of resistance 100 Ω, a current is induced by changing the magnetic flux through it. The current vs time variation is as shown below. The magnitude of change in flux through the coil is -




1. 250 Wb
2. 275 Wb
3. 20 Wb
4. 225 Wb

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785132**
Option 1 ID : **2268953044597**
Option 2 ID : **2268953044598**
Option 3 ID : **2268953044599**
Option 4 ID : **2268953044600**
Status : **Answered**
Chosen Option : **2**

**Q.47**

The surface of a certain metal is first illuminated with light of wavelength, $\lambda_1$ = 350 nm, and then by light of wavelength, $\lambda_2$ = 540 nm. It is found that the maximum speed of the photoelectrons in the two cases differ by a factor of 2. The work function of the metal (in eV ) is close to (Energy of photon = $\frac{1240}{\lambda(nm)}$ eV)

1. 2.58
2. 1.88
3. 3.22
4. 1.48

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785149**
Option 1 ID : **2268953044665**
Option 2 ID : **2268953044666**
Option 3 ID : **2268953044667**
Option 4 ID : **2268953044668**
Status : **Answered**
Chosen Option : **2**

Q.48

Match **List-I** with **List-II**

| **List-I** | **List-II** |
|---|---|
| **(Wave)** | **(Wavelength)** |
| (A) Microwaves | (I) 100 m |
| (B) Gamma Rays | (II) $10^{-15}$ m |
| (C) A. M. Radio waves | (III) $10^{-10}$ m |
| (D) X-Rays | (IV) $10^{-3}$ m |

Choose the **correct** answer from the options given below:

1. (A) - (II), (B) - (I), (C) - (IV), (D) - (III)
2. (A) - (IV), (B) - (II), (C) - (I), (D) - (III)
3. (A) - (III), (B) - (II), (C) - (I), (D) - (IV)
4. (A) - (I), (B) - (III), (C) - (IV), (D) - (II)

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785136**
Option 1 ID : **2268953044613**
Option 2 ID : **2268953044614**
Option 3 ID : **2268953044615**
Option 4 ID : **2268953044616**
Status : **Answered**
Chosen Option : **2**

**Q.49**

The velocity of an electromagnetic wave in a medium with $\varepsilon_r = 2$ and $\mu_r = 18$ is

1. $1.5 \times 10^8$ m/s
2. $2 \times 10^8$ m/s
3. $0.5 \times 10^8$ m/s
4. $0.25 \times 10^8$ m/s

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785139**
Option 1 ID : **2268953044625**
Option 2 ID : **2268953044626**
Option 3 ID : **2268953044627**
Option 4 ID : **2268953044628**
Status : **Answered**
Chosen Option : **3**

**Q.50**

A circular wire loop of radius $R$ is placed in the x-y plane centered at origin O. A square loop of side 'a' ($a << R$) of single turn is placed with its plane parallel to the x-y plane and at a distance of $z = \sqrt{3}\,R$. The mutual inductance between the loops is

1. $\frac{\mu_0 a^2}{4R}$
2. $\frac{\mu o\, R}{8a^2}$
3. $\frac{\mu o\, R}{4a}$
4. $\frac{\mu o\, a^2}{16R}$

**Options** 1. 1
2. 2
3. 3
4. 4

Question Type : **MCQ**
Question ID : **226895785133**
Option 1 ID : **2268953044601**
Option 2 ID : **2268953044602**
Option 3 ID : **2268953044603**
Option 4 ID : **2268953044604**
Status : **Answered**
Chosen Option : **2**