

Section : Common

Q.1 If m and n are respectively the order and degree of the differential equation :

$$\left(\frac{d^2y}{dx^2}\right)^5 + 6 \frac{\left(\frac{d^2y}{dx^2}\right)^3}{\frac{d^3y}{dx^3}} + \frac{d^3y}{dx^3} = x^2 + 5, \text{ then :}$$

- (1) $m=3, n=3$
- (2) $m=2, n=3$
- (3) $m=3, n=2$
- (4) $m=3, n=5$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710605**

Option 1 ID : **21280742417**

Option 2 ID : **21280742418**

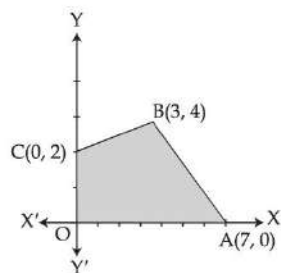
Option 3 ID : **21280742419**

Option 4 ID : **21280742420**

Status : **Not Answered**

Chosen Option : --

Q.2 The feasible region for a LPP is shown in the given figure. The maximum value of $z = 2x + 5y$ is :



- (1) 14
- (2) 10
- (3) 36
- (4) 26

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710610**

Option 1 ID : **21280742437**

Option 2 ID : **21280742438**

Option 3 ID : **21280742439**

Option 4 ID : **21280742440**

Status : **Answered**

Chosen Option : **4**

Q.3 The sum of the products of elements of any row with the cofactors of corresponding elements is equal to :

- (1) the value of the determinant
- (2) 0
- (3) sum of cofactors
- (4) adjoint of matrix

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710598**

Option 1 ID : **21280742389**

Option 2 ID : **21280742390**

Option 3 ID : **21280742391**

Option 4 ID : **21280742392**

Status : **Answered**

Chosen Option : **1**

Q.4 The mean number of heads in two tosses of a coin is :

(1) 2

(2) $\frac{1}{2}$

(3) 1

(4) $\frac{3}{2}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710607**

Option 1 ID : **21280742425**

Option 2 ID : **21280742426**

Option 3 ID : **21280742427**

Option 4 ID : **21280742428**

Status : **Answered**

Chosen Option : **2**

Q.5 Match List - I with List - II. Match the integrating factors :

List - I (Differential Equation)	List - II (Integrating factor)
(A) $\frac{dy}{dx} + 3y = e^{-2x}$	(I) $\frac{1}{x}$
(B) $x \frac{dy}{dx} + y = 3x^2$	(II) e^{-x}
(C) $x \frac{dy}{dx} - y = 3x^2$	(III) x
(D) $\frac{dy}{dx} - y = x$	(IV) e^{3x}

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

- (1) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)
- (2) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)
- (3) (A)-(II), (B)-(III), (C)-(IV), (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 : **21280710606**

Option 1 ID : **21280742421**

Option 2 ID : **21280742422**

Option 3 ID : **21280742423**

Option 4 ID : **21280742424**

Status : **Not Answered**

Chosen Option : --

Q.6 If the function $f(x) = x^4 - 62x^2 + ax + 9$ attains its local maximum value at $x=1$, then a is equal to :

- (1) 120
- (2) 110
- (3) 100
- (4) 90

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710602**

Option 1 ID : **21280742405**

Option 2 ID : **21280742406**

Option 3 ID : **21280742407**

Option 4 ID : **21280742408**

Status : **Answered**

Chosen Option : 1

Q.7 The slope of the tangent to the curve $x = at^2$, $y = 2at$ at 't' is :

(1) $\frac{1}{t}$

(2) $\frac{1}{t^2}$

(3) $-\frac{1}{t}$

(4) $-\frac{1}{t^2}$

Options

1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710601**

Option 1 ID : **21280742401**

Option 2 ID : **21280742402**

Option 3 ID : **21280742403**

Option 4 ID : **21280742404**

Status : **Answered**

Chosen Option : **4**

Q.8

If $\begin{vmatrix} 3x & 4 \\ 7 & x \end{vmatrix} = \begin{vmatrix} 6 & 3 \\ 2 & 1 \end{vmatrix}$ then :

(1) $x^2 = \frac{26}{3}$

(2) $x^2 = \frac{25}{3}$

(3) $x^2 = \frac{23}{3}$

(4) $x^2 = \frac{28}{3}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710599**

Option 1 ID : **21280742393**

Option 2 ID : **21280742394**

Option 3 ID : **21280742395**

Option 4 ID : **21280742396**

Status : **Answered**

Chosen Option : **4**

Q.9

 $\int \left(x + \frac{1}{x}\right)^2 dx$ equals :

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

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

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

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

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**Question ID : **21280710603**Option 1 ID : **21280742409**Option 2 ID : **21280742410**Option 3 ID : **21280742411**Option 4 ID : **21280742412**Status : **Answered**Chosen Option : **4**

Q.10

Given $A = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} x & y \\ 1 & 4 \end{bmatrix}$, If $A = B$, then x and y are :

- (1) $x = 2$
 $y = 3$
- (2) $x = 1$
 $y = 2$
- (3) $x = 3$
 $y = 2$
- (4) $x = -2$
 $y = -3$

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : MCQ

Question ID : 21280710596

Option 1 ID : 21280742381

Option 2 ID : 21280742382

Option 3 ID : 21280742383

Option 4 ID : 21280742384

Status : Answered

Chosen Option : 1

Q.11 If order of matrix A is $m \times p$ and order of matrix B is $p \times n$, then what is the order of matrix AB ?

- (1) $m \times p$
- (2) $m \times n$
- (3) $p \times n$
- (4) $m \times 2$

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : MCQ

Question ID : 21280710597

Option 1 ID : 21280742385

Option 2 ID : 21280742386

Option 3 ID : 21280742387

Option 4 ID : 21280742388

Status : Answered

Chosen Option : 2

Q.12

If $x = a\left(t - \frac{1}{t}\right)$, $y = b\left(t + \frac{1}{t}\right)$, then $\frac{dy}{dx} =$

(1) $\frac{x}{y}$

(2) $\frac{b^2x}{a^2y}$

(3) $\frac{bx}{ay}$

(4) $\frac{a^2y}{b^2x}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**Question ID : **21280710600**Option 1 ID : **21280742397**Option 2 ID : **21280742398**Option 3 ID : **21280742399**Option 4 ID : **21280742400**Status : **Not Answered**

Chosen Option : --

Q.13 The area enclosed between $y^2 = 4x$, $x = 1$, $x = 4$ in first quadrant is :

- (1) $\frac{28}{3}$ sq. unit
- (2) $\frac{27}{2}$ sq. unit
- (3) $\frac{25}{2}$ sq. unit
- (4) $\frac{27}{5}$ sq. unit

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710604**

Option 1 ID : **21280742413**

Option 2 ID : **21280742414**

Option 3 ID : **21280742415**

Option 4 ID : **21280742416**

Status : **Not Answered**

Chosen Option : --

Q.14 In a Linear Programming problem, the objective function is always :

- (1) Linear
- (2) Quadratic
- (3) Cubic
- (4) Biquadratic

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710609**

Option 1 ID : **21280742433**

Option 2 ID : **21280742434**

Option 3 ID : **21280742435**

Option 4 ID : **21280742436**

Status : **Answered**

Chosen Option : **1**

Q.15 If the probability distribution of a random variable X is as given below :

X	-1	0	1	2	3
P(X)	K	$\frac{1}{5}$	2K	$\frac{3}{10}$	K

Then the value of K is :

(1) $\frac{3}{8}$

(2) $\frac{1}{4}$

(3) $\frac{5}{8}$

(4) $\frac{1}{8}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710608**

Option 1 ID : **21280742429**

Option 2 ID : **21280742430**

Option 3 ID : **21280742431**

Option 4 ID : **21280742432**

Status : **Not Answered**

Chosen Option : --

Section : **Core Mathematics**

Q.1

If A and B are invertible matrices of order 3, $|A| = 2$ and $|(AB)^{-1}| = -\frac{1}{6}$, then the value of $|B|$ is :

(1) 3

(2) -3

(3) 2

(4) $\frac{1}{6}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710618**

Option 1 ID : **21280742469**

Option 2 ID : **21280742470**

Option 3 ID : **21280742471**

Option 4 ID : **21280742472**

Status : **Answered**

Chosen Option : **2**

Q.2 Area of the region bounded by the curve $y = \cos x$ and x -axis between $x=0$ and $x=\pi$ is :

- (1) 2 sq. units
- (2) 3 sq. units
- (3) 4 sq. units
- (4) 1 sq. unit

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710630**

Option 1 ID : **21280742517**

Option 2 ID : **21280742518**

Option 3 ID : **21280742519**

Option 4 ID : **21280742520**

Status : **Answered**

Chosen Option : **3**

Q.3

Let $A = \begin{bmatrix} 1 & -2 & 3 \\ 1 & 2 & 1 \\ \lambda & 2 & -3 \end{bmatrix}$. If A^{-1} does not exist, then $\lambda =$

- (1) -2
- (2) 2
- (3) 1
- (4) -1

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710619**

Option 1 ID : **21280742473**

Option 2 ID : **21280742474**

Option 3 ID : **21280742475**

Option 4 ID : **21280742476**

Status : **Not Answered**

Chosen Option : **--**

Q.4 The interval in which the function $f(x) = 2x^3 - 3x^2 - 36x + 7$ is strictly decreasing is :

- (1) $(-3, -2)$
- (2) $(-2, 3)$
- (3) $(2, 3)$
- (4) $(2, -3)$

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710625**

Option 1 ID : **21280742497**

Option 2 ID : **21280742498**

Option 3 ID : **21280742499**

Option 4 ID : **21280742500**

Status : **Answered**

Chosen Option : **2**

Q.5 The vector equation of the line joining the points $(-2, -3, -4)$ and $(1, -2, 4)$ is :

- (1) $\vec{r} = (-2\hat{i} - 3\hat{j} - 4\hat{k}) + \lambda (\hat{i} - 2\hat{j} + 4\hat{k})$
- (2) $\vec{r} = (2\hat{i} + 3\hat{j} + 4\hat{k}) + \lambda (3\hat{i} - \hat{j} + 8\hat{k})$
- (3) $\vec{r} = (-2\hat{i} - 3\hat{j} - 4\hat{k}) + \lambda (3\hat{i} + \hat{j} + 8\hat{k})$
- (4) $\vec{r} = (2\hat{i} + 3\hat{j} + 4\hat{k}) + \lambda (3\hat{i} + \hat{j} + 8\hat{k})$

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710636**

Option 1 ID : **21280742541**

Option 2 ID : **21280742542**

Option 3 ID : **21280742543**

Option 4 ID : **21280742544**

Status : **Answered**

Chosen Option : **1**

Q.6 Match List - I with List - II.**List - I**

(A) If A and B are mutually exclusive events,

then $P(A \cup B) =$ (B) If A and B are independent events, then $P(A \cap B) =$ (C) If A and B are two events of a sample space of an experiment, then $P(A/B) =$ (D) If A and B are two events of a sample space of an experiment, then $P(B/A) =$ **List - II**(I) $\frac{P(A \cap B)}{P(B)}, P(B) \neq 0$ (II) $\frac{P(A \cap B)}{P(A)}, P(A) \neq 0$ (III) $P(A) \cdot P(B)$ (IV) $P(A) + P(B)$ Choose the **correct** answer from the options given below :

(1) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

(2) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

(3) (A)-(II), (B)-(III), (C)-(IV), (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 : **21280710639**Option 1 ID : **21280742553**Option 2 ID : **21280742554**Option 3 ID : **21280742555**Option 4 ID : **21280742556**Status : **Answered**Chosen Option : **1**

Q.7 The corner points of the feasible region determined by the system of linear constraints are (0, 0), (0, 40), (20, 40), (60, 20), (60, 0). The objective function is $z = 4x + 3y$.

Compare the quantity in **Column - A** and **Column - B**.

Column - A
Maximum value of z

Column - B
350

- (1) The quantity in column A is greater
- (2) The quantity in column B is greater
- (3) The two quantities are equal
- (4) The quantity in column B is greater than twice the quantity in column A

Options

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

Question Type : **MCQ**Question ID : **21280710638**Option 1 ID : **21280742549**Option 2 ID : **21280742550**Option 3 ID : **21280742551**Option 4 ID : **21280742552**Status : **Answered**Chosen Option : **2**

Q.8 The degree of the differential equation

$$\left[1 + \left(\frac{dy}{dx}\right)\right]^3 = \left(\frac{d^2y}{dx^2}\right)^2 \text{ is :}$$

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710631**

Option 1 ID : **21280742521**

Option 2 ID : **21280742522**

Option 3 ID : **21280742523**

Option 4 ID : **21280742524**

Status : **Answered**

Chosen Option : **2**

Q.9 Let $a \leq \tan^{-1}x + \cot^{-1}x + \sin^{-1}x \leq b$. If α and β denote the minimum and maximum possible values of a and b respectively, then :

- (1) $\alpha = 0, \beta = \pi$
- (2) $\alpha = 0, \beta = \frac{\pi}{2}$
- (3) $\alpha = \frac{\pi}{2}, \beta = \pi$
- (4) $\alpha = -\frac{\pi}{2}, \beta = \frac{\pi}{2}$

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710614**

Option 1 ID : **21280742453**

Option 2 ID : **21280742454**

Option 3 ID : **21280742455**

Option 4 ID : **21280742456**

Status : **Not Answered**

Chosen Option : **--**

Q.10

$$\int \frac{\sqrt{\tan x}}{\sin x \cos x} dx \text{ equals :}$$

(1) $2\sqrt{\tan x} + c$

(2) $2\sqrt{\cot x} + c$

(3) $\sqrt{\tan x} + c$

(4) $\frac{2}{\sqrt{\tan x}} + c$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**Question ID : **21280710628**Option 1 ID : **21280742509**Option 2 ID : **21280742510**Option 3 ID : **21280742511**Option 4 ID : **21280742512**Status : **Answered**Chosen Option : **2**

Q.11

If a, b and c are all different from zero and $\begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix} = 0$, then the value of $\frac{1}{a} + \frac{1}{b} + \frac{1}{c}$

is :

(1) 0

(2) abc

(3) -1

(4) $\frac{1}{abc}$

Options 1. 1

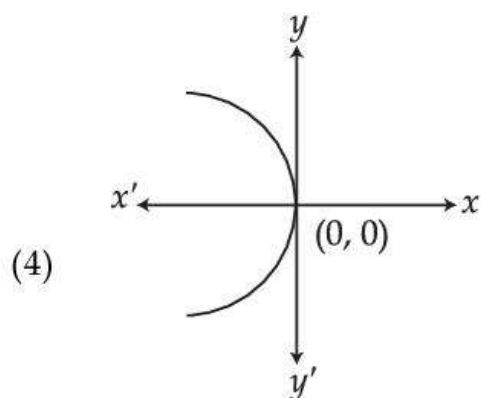
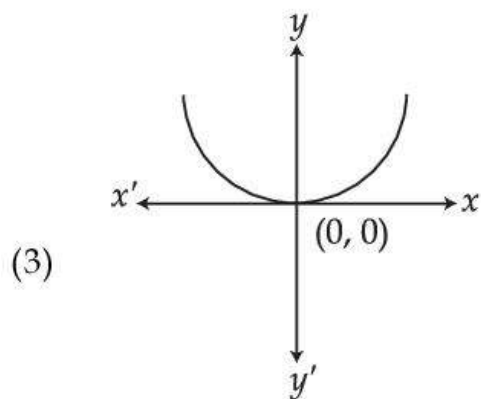
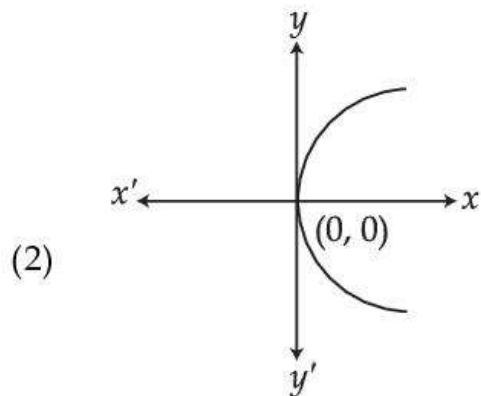
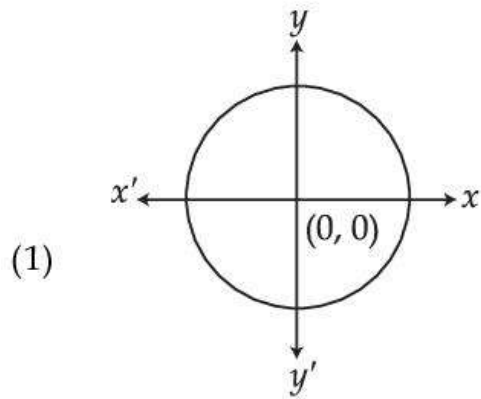
2. 2

3. 3

4. 4

Question Type : **MCQ**Question ID : **21280710620**Option 1 ID : **21280742477**Option 2 ID : **21280742478**Option 3 ID : **21280742479**Option 4 ID : **21280742480**Status : **Answered**Chosen Option : **4**

Q.12 Which of the following graphs represent a function ?



Options 1. 1

2. 2

3. 3

4. 4

Question Type : MCQ

Question ID : 21280710611

Option 1 ID : 21280742441

Option 2 ID : **21280742442**
Option 3 ID : **21280742443**
Option 4 ID : **21280742444**
Status : **Answered**
Chosen Option : **3**

Q.13 Solution of differential equation $xdy - ydx = 0$ represents :

- (1) family of straight lines passing through origin
- (2) family of parabolas whose vertex is at origin
- (3) family of circles whose centre is at origin
- (4) family of straight lines passing through (1, 1)

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **21280710632**
Option 1 ID : **21280742525**
Option 2 ID : **21280742526**
Option 3 ID : **21280742527**
Option 4 ID : **21280742528**
Status : **Answered**
Chosen Option : **3**

Q.14 The maximum value of $(\sin x)(\cos x)$ is :

- (1) 1
- (2) $\frac{1}{2}$
- (3) $\frac{1}{4}$
- (4) $\sqrt{2}$

Options 1. 1

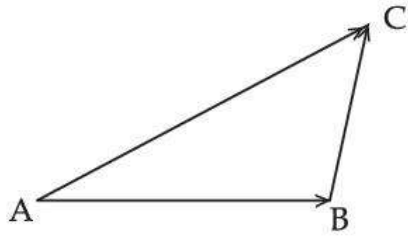
2. 2

3. 3

4. 4

Question Type : **MCQ**
Question ID : **21280710624**
Option 1 ID : **21280742493**
Option 2 ID : **21280742494**
Option 3 ID : **21280742495**
Option 4 ID : **21280742496**
Status : **Answered**
Chosen Option : **1**

Q.15 In $\triangle ABC$:



(A) $\vec{AB} + \vec{BC} + \vec{CA} = \vec{O}$

(B) $\vec{AB} + \vec{BC} - \vec{AC} = \vec{O}$

(C) $\vec{AB} + \vec{BC} - \vec{CA} = \vec{O}$

(D) $\vec{AB} - \vec{CB} + \vec{CA} = \vec{O}$

(E) $\vec{AB} - \vec{CB} - \vec{CA} = \vec{O}$

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

- (1) (A), (B), (D) only
- (2) (A), (B), (E) only
- (3) (B), (E) only
- (4) (A), (D), (E) only

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710633**

Option 1 ID : **21280742529**

Option 2 ID : **21280742530**

Option 3 ID : **21280742531**

Option 4 ID : **21280742532**

Status : **Answered**

Chosen Option : **1**

Q.16

If $f(x) = \begin{cases} \frac{k \cos x}{\pi - 2x}, & x \neq \frac{\pi}{2} \\ 3, & x = \frac{\pi}{2} \end{cases}$ is continuous at $x = \frac{\pi}{2}$, then k is :

- (1) 6
- (2) 4
- (3) 3
- (4) 2

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : MCQ

Question ID : 21280710621

Option 1 ID : 21280742481

Option 2 ID : 21280742482

Option 3 ID : 21280742483

Option 4 ID : 21280742484

Status : Not Answered

Chosen Option : --

Q.17

If $|\vec{a}| = 3$ and $|\vec{b}| = 4$, then a value of λ for which $\vec{a} + \lambda \vec{b}$ and $\vec{a} - \lambda \vec{b}$ are perpendicular is :

- (1) $\frac{9}{16}$
- (2) $\frac{3}{4}$
- (3) $\frac{3}{2}$
- (4) $\frac{4}{3}$

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : MCQ

Question ID : 21280710634

Option 1 ID : 21280742533

Option 2 ID : 21280742534

Option 3 ID : 21280742535

Option 4 ID : 21280742536

Status : Answered

Chosen Option : 1

Q.18

If matrix $A = \begin{bmatrix} 3 & x \\ y & 0 \end{bmatrix}$ and $A' = A$, then :

- (1) $x = y$
- (2) $x = 0, y = 3$
- (3) $x = 3, y = 0$
- (4) $x + y = 3$

Options

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

Question Type : **MCQ**Question ID : **21280710615**Option 1 ID : **21280742457**Option 2 ID : **21280742458**Option 3 ID : **21280742459**Option 4 ID : **21280742460**Status : **Answered**Chosen Option : **1**

Q.19

$\int e^x \sec x (1 + \tan x) dx$ equals :

- (1) $e^x \sec x + c$
- (2) $e^x \tan x + c$
- (3) $e^x \sin x + c$
- (4) $e^x \cos x + c$

Options

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

Question Type : **MCQ**Question ID : **21280710627**Option 1 ID : **21280742505**Option 2 ID : **21280742506**Option 3 ID : **21280742507**Option 4 ID : **21280742508**Status : **Answered**Chosen Option : **1**

Q.20 Relation R on Real Numbers is defined as $R = \{(a, b) : a \leq b\}$.

The relation is :

- (1) Reflexive and Symmetric but not Transitive
- (2) Symmetric and Transitive but not Reflexive
- (3) Reflexive and Transitive but not Symmetric
- (4) Equivalence relation

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710612**

Option 1 ID : **21280742445**

Option 2 ID : **21280742446**

Option 3 ID : **21280742447**

Option 4 ID : **21280742448**

Status : **Answered**

Chosen Option : **4**

Q.21 The variance of number of heads in three tosses of a coin is :

(1) $\frac{3}{2}$

(2) $\frac{3}{4}$

(3) 1

(4) 2

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710640**

Option 1 ID : **21280742557**

Option 2 ID : **21280742558**

Option 3 ID : **21280742559**

Option 4 ID : **21280742560**

Status : **Answered**

Chosen Option : **3**

Q.22

If $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$, then $A^2 - 5A + 7I =$

- (1) O
- (2) I
- (3) $2I$
- (4) $3I$

Options

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

Question Type : **MCQ**Question ID : **21280710617**Option 1 ID : **21280742465**Option 2 ID : **21280742466**Option 3 ID : **21280742467**Option 4 ID : **21280742468**Status : **Answered**Chosen Option : **1**

Q.23

The two curves $x^3 - 3xy^2 + 15 = 0$ and $3x^2y - y^3 + 17 = 0$:

- (1) cut at right angles
- (2) touch each other
- (3) cut at an angle $\frac{\pi}{4}$
- (4) cut at an angle $\frac{\pi}{3}$

Options

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

Question Type : **MCQ**Question ID : **21280710626**Option 1 ID : **21280742501**Option 2 ID : **21280742502**Option 3 ID : **21280742503**Option 4 ID : **21280742504**Status : **Answered**Chosen Option : **1**

Q.24

The derivative of $\sec(\tan\sqrt{x})$ with respect to x is :

(1) $\frac{\sec(\tan\sqrt{x})\tan(\tan\sqrt{x})\sec^2\sqrt{x}}{2\sqrt{x}}$

(2) $\sec^2(\tan\sqrt{x})$

(3) $\frac{\sec(\tan\sqrt{x})\tan(\tan\sqrt{x})\sec^2\sqrt{x}}{x}$

(4) $\sec^2(\tan x^{1/3})$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : MCQ

Question ID : 21280710623

Option 1 ID : 21280742489

Option 2 ID : 21280742490

Option 3 ID : 21280742491

Option 4 ID : 21280742492

Status : Answered

Chosen Option : 3

Q.25

The corner points of the feasible region determined by the following system of linear inequalities :

$2x + y \leq 10$, $x + 3y \leq 15$, $x, y \geq 0$ are $(0, 0)$, $(5, 0)$, $(3, 4)$ and $(0, 5)$. Let $z = px + qy$, where $p, q > 0$ condition on p and q so that maximum of z occurs at both $(3, 4)$ and $(0, 5)$ is :

(1) $p = q$

(2) $p = 2q$

(3) $p = 3q$

(4) $q = 3p$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : MCQ

Question ID : 21280710637

Option 1 ID : 21280742545

Option 2 ID : 21280742546

Option 3 ID : 21280742547

Option 4 ID : 21280742548

Status : Not Answered

Chosen Option : --

Q.26 Which of the following statements are correct ?

- (A) If $f: \mathbb{R} \rightarrow \mathbb{R}$ then $f(x) = |x|$ is continuous everywhere.
 (B) If $f: \mathbb{R} \rightarrow \mathbb{R}$ then $f(x) = |x|$ is continuous everywhere but not differentiable at $x=0$.
 (C) Let $f: \mathbb{R} - \{0\} \rightarrow \mathbb{R}$ then $f(x) = \frac{1}{x}$ is continuous everywhere.
 (D) Let $f: \mathbb{R} \rightarrow \mathbb{R}$ then $f(x) = |x-1| + |x-2|$ is continuous everywhere but not differentiable at exactly 2 points.
 (E) If $f: \mathbb{R} \rightarrow \mathbb{R}$ then $f(x) = \cot x$ is continuous everywhere.

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

- (1) (A) only
 (2) (A), (C) only
 (3) (A), (B), (C), (D) only
 (4) (D), (E) only

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710622**

Option 1 ID : **21280742485**

Option 2 ID : **21280742486**

Option 3 ID : **21280742487**

Option 4 ID : **21280742488**

Status : **Not Answered**

Chosen Option : --

Q.27

If $A = \begin{bmatrix} 1 & -2 & 3 \\ -4 & 2 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -2 \\ 3 & -4 \\ 2 & 4 \end{bmatrix}$ then product AB is :

(1) Not possible

(2) $\begin{bmatrix} 1 & -6 & 6 \\ 8 & -8 & 16 \end{bmatrix}$

(3) $\begin{bmatrix} 9 \\ 19 \\ 15 \end{bmatrix}$

(4) $\begin{bmatrix} 1 & 18 \\ 10 & 16 \end{bmatrix}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710616**

Option 1 ID : **21280742461**

Option 2 ID : **21280742462**

Option 3 ID : **21280742463**

Option 4 ID : **21280742464**

Status : **Answered**

Chosen Option : **4**

Q.28 The area enclosed between the curve $y = x^2 + 2$ and x-axis between $x=0$ and $x=3$ is :

- (1) 14 sq. units
- (2) 15 sq. units
- (3) 16 sq. units
- (4) 18 sq. units

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710629**

Option 1 ID : **21280742513**

Option 2 ID : **21280742514**

Option 3 ID : **21280742515**

Option 4 ID : **21280742516**

Status : **Not Answered**

Chosen Option : --

Q.29 The angle between the two planes $x + y - z = 3$ and $3x + 2y + z = 5$ is :

- (1) $\cos^{-1} 4$
- (2) $\cos^{-1} \frac{2\sqrt{42}}{21}$
- (3) $\cos^{-1} \frac{1}{4}$
- (4) $\cos^{-1} \frac{1}{\sqrt{42}}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710635**

Option 1 ID : **21280742537**

Option 2 ID : **21280742538**

Option 3 ID : **21280742539**

Option 4 ID : **21280742540**

Status : **Not Answered**

Chosen Option : --

Q.30

If $\sin^{-1}x + \sin^{-1}y = \frac{2\pi}{3}$, then the value of $\cos^{-1}x + \cos^{-1}y$ is :

- (1) $\frac{\pi}{2}$
- (2) $\frac{\pi}{3}$
- (3) $\frac{2\pi}{3}$
- (4) $\frac{\pi}{6}$

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : MCQ

Question ID : 21280710613

Option 1 ID : 21280742449

Option 2 ID : 21280742450

Option 3 ID : 21280742451

Option 4 ID : 21280742452

Status : Not Answered

Chosen Option : --

Q.31

If a set P contains 5 elements and the set Q contains 8 elements, then the number of one-one functions from A to B is :

- (1) 8C_5
- (2) ${}^8C_5 \times 5!$
- (3) 5^8
- (4) 8^5

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : MCQ

Question ID : 21280710641

Option 1 ID : 21280742561

Option 2 ID : 21280742562

Option 3 ID : 21280742563

Option 4 ID : 21280742564

Status : Answered

Chosen Option : 3

Q.32

The equation of tangent to the curve given by $x = a \sin^3 t$, $y = b \cos^3 t$ at a point where $t = \frac{\pi}{2}$ is :

- (1) $x = 0$
- (2) $y = 0$
- (3) $y = \frac{\pi}{2}$
- (4) $x = \frac{\pi}{2}$

Options

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

Question Type : **MCQ**Question ID : **21280710642**Option 1 ID : **21280742565**Option 2 ID : **21280742566**Option 3 ID : **21280742567**Option 4 ID : **21280742568**Status : **Answered**Chosen Option : **3****Q.33**

The rate of change in area of a triangle having sides 10 cm and 12 cm when the variable angle between them is $\theta = 60^\circ$, is :

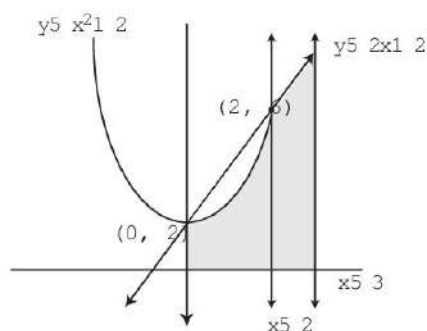
- (1) $30 \text{ cm}^2/\text{radian}$
- (2) $120 \text{ cm}^2/\text{radian}$
- (3) $30\sqrt{3} \text{ cm}^2/\text{radian}$
- (4) $60\sqrt{3} \text{ cm}^2/\text{radian}$

Options

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

Question Type : **MCQ**Question ID : **21280710643**Option 1 ID : **21280742569**Option 2 ID : **21280742570**Option 3 ID : **21280742571**Option 4 ID : **21280742572**Status : **Not Answered**Chosen Option : **--**

Q.34 Which of the following regions will represent the shaded area in the given figure ?



- (1) $\{(x, y) : 0 \leq y \leq x^2 + 2, 0 \leq y \leq 2x + 2, 0 \leq x \leq 3\}$
 (2) $\{(x, y) : 0 \leq y \leq x^2 + 2, y \geq 2x + 2, x \leq 3\}$
 (3) $\{(x, y) : y \geq x^2 + 2, x \leq 2, x \geq 0\}$
 (4) $\{(x, y) : y \geq x^2 + 2, x \geq 0, x \geq 3\}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : MCQ

Question ID : 21280710644

Option 1 ID : 21280742573

Option 2 ID : 21280742574

Option 3 ID : 21280742575

Option 4 ID : 21280742576

Status : Not Answered

Chosen Option : --

Q.35 If the equation of a floor of a room is given by $x + y - z + 4 = 0$ and the equation of roof is given by $x + y - z + 5 = 0$. Then, the height of the room is :

- (1) $\frac{1}{6}$ units
 (2) $\frac{1}{3}$ units
 (3) $\frac{1}{\sqrt{3}}$ units
 (4) $\frac{1}{\sqrt{6}}$ units

Options 1. 1

2. 2

3. 3

4. 4

Question Type : MCQ

Question ID : 21280710645

Option 1 ID : 21280742577

Option 2 ID : 21280742578

Option 3 ID : 21280742579

Option 4 ID : 21280742580

Status : Answered

Chosen Option : 3

Section : Applied Mathematics

Q.1 If $C(x) = ax^2 - bx - c$ represents the total cost function then the slope of the tangent to the marginal cost curve at the point (x, y) is :

- (1) a
- (2) $2a$
- (3) $2ax$
- (4) $\frac{x}{a}$

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710656**

Option 1 ID : **21280742621**

Option 2 ID : **21280742622**

Option 3 ID : **21280742623**

Option 4 ID : **21280742624**

Status : **Not Answered**

Chosen Option : --

Q.2 The objective function $z = 4x + 3y$ can be maximised subject to the constraints $3x + 4y \leq 24$, $8x + 6y \leq 48$, $x \leq 5$, $y \leq 6$, $x \geq 0$, $y \geq 0$:

- (1) at one point only
- (2) at two points only
- (3) at an infinite number of points
- (4) no point exists

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710674**

Option 1 ID : **21280742693**

Option 2 ID : **21280742694**

Option 3 ID : **21280742695**

Option 4 ID : **21280742696**

Status : **Not Answered**

Chosen Option : --

Q.3 The EMI (in ₹) under the flat rate on a loan of ₹ 6,00,000 with 20% annual interest for 5 years is :

- (1) ₹ 5,000
- (2) ₹ 10,000
- (3) ₹ 20,000
- (4) ₹ 30,000

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710667**

Option 1 ID : **21280742665**

Option 2 ID : **21280742666**

Option 3 ID : **21280742667**

Option 4 ID : **21280742668**

Status : **Not Answered**

Chosen Option : --

Q.4 A company has issued a bond having a face value of ₹ 10,000 paying annual dividends at 8.5%. The bond will be redeemed at par at the end of 10 years, then the purchase price of this bond if the investor wishes a yield rate of 8% is : [Given $(1.08)^{-10} = 0.46319349$]

- (1) ₹ 10,555.50
- (2) ₹ 10,535.50
- (3) ₹ 10,333.33
- (4) ₹ 10,335.50

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710670**

Option 1 ID : **21280742677**

Option 2 ID : **21280742678**

Option 3 ID : **21280742679**

Option 4 ID : **21280742680**

Status : **Not Answered**

Chosen Option : --

Q.5 The present value of a perpetuity of ₹ 6,240 payable at the beginning of each year, if money is worth 10% effective, is :

- (1) ₹ 66,640
- (2) ₹ 68,640
- (3) ₹ 69,640
- (4) ₹ 67,640

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710672**

Option 1 ID : **21280742685**

Option 2 ID : **21280742686**

Option 3 ID : **21280742687**

Option 4 ID : **21280742688**

Status : **Not Answered**

Chosen Option : --

Q.6 An asset costing ₹ 50,000 has a useful life of 4 years. The estimated scrap value is ₹ 10,000. By using linear depreciation method, the book value at the end of the second year is :

- (1) ₹ 30,000
- (2) ₹ 40,000
- (3) ₹ 20,000
- (4) ₹ 10,000

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710668**

Option 1 ID : **21280742669**

Option 2 ID : **21280742670**

Option 3 ID : **21280742671**

Option 4 ID : **21280742672**

Status : **Not Answered**

Chosen Option : --

Q.7 Using simple average of relatives method, the price index for 2011, taking 2001 as base year, was found to be 127. If $\sum p_0 = 263$, then x and y from the following data are :

Commodities	A	B	C	D	E	F
Prices (in ₹) in 2001	80	70	x	20	18	25
Prices (in ₹) in 2011	100	87.50	61	22	y	32.50

- (1) $x = 50, y = 27$
- (2) $x = 50, y = 50$
- (3) $x = 27, y = 50$
- (4) $x = 27, y = 27$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710665**

Option 1 ID : **21280742657**

Option 2 ID : **21280742658**

Option 3 ID : **21280742659**

Option 4 ID : **21280742660**

Status : **Not Answered**

Chosen Option : --

Q.8 The standard deviation of a sampling distribution of a statistic is also known as :

- (1) sample size
- (2) parameter
- (3) standard error
- (4) standard measure

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710659**

Option 1 ID : **21280742633**

Option 2 ID : **21280742634**

Option 3 ID : **21280742635**

Option 4 ID : **21280742636**

Status : **Not Answered**

Chosen Option : --

Q.9

In binomial distribution with $n = 10$ and $P = \frac{1}{3}$, the probability of the event that unequal number of failures and successes occur is :

- (1) $\frac{5665}{6561}$
- (2) $\frac{6905}{6912}$
- (3) $\frac{5556}{6561}$
- (4) $\frac{5665}{6912}$

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**Question ID : **21280710658**Option 1 ID : **21280742629**Option 2 ID : **21280742630**Option 3 ID : **21280742631**Option 4 ID : **21280742632**Status : **Not Answered**

Chosen Option : --

Q.10

The present value of a perpetuity of ₹ 2,500 payable at the end of each year, if money is worth 10% compounded annually, is :

- (1) ₹ 25,000
- (2) ₹ 50,000
- (3) ₹ 1,00,000
- (4) ₹ 2,50,000

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**Question ID : **21280710673**Option 1 ID : **21280742689**Option 2 ID : **21280742690**Option 3 ID : **21280742691**Option 4 ID : **21280742692**Status : **Not Answered**

Chosen Option : --

Q.11 Rahul can run 34.4 m in the given time as Amit runs 50 m. By how much distance Rahul is away from Amit at the winning point, in a two km race ?

- (1) 602 m
- (2) 620 m
- (3) 642 m
- (4) 624 m

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710660**

Option 1 ID : **21280742637**

Option 2 ID : **21280742638**

Option 3 ID : **21280742639**

Option 4 ID : **21280742640**

Status : **Not Answered**

Chosen Option : --

Q.12

If the matrix $A = \begin{bmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{bmatrix}$ satisfies the equation $A^T A = I_3$, then $x^2 + y^2 + z^2$ is :

- (1) 0
- (2) 1
- (3) 2
- (4) 6

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710652**

Option 1 ID : **21280742605**

Option 2 ID : **21280742606**

Option 3 ID : **21280742607**

Option 4 ID : **21280742608**

Status : **Not Answered**

Chosen Option : --

Q.13 Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be defined such that

$$f(x) = 16x^2 - 16x + 12$$

- (A) Maximum value of $f(x)$ is 8
- (B) Minimum value of $f(x)$ is 8
- (C) Minimum value of $f(x)$ is 16
- (D) No maximum value of $f(x)$

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

- (1) (A), (C) Only
- (2) (B), (D) Only
- (3) (A), (B), (C) Only
- (4) (A), (B) Only

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710663**

Option 1 ID : **21280742649**

Option 2 ID : **21280742650**

Option 3 ID : **21280742651**

Option 4 ID : **21280742652**

Status : **Not Answered**

Chosen Option : --

Q.14 Mr. Ram took a loan of ₹ 4,00,000 at 10% annual interest rate and paid ₹ 20,000 as monthly instalment under flat rate system. What is the term of the loan ?

- (1) 5 years
- (2) 4 years
- (3) 3 years
- (4) 2 years

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710666**

Option 1 ID : **21280742661**

Option 2 ID : **21280742662**

Option 3 ID : **21280742663**

Option 4 ID : **21280742664**

Status : **Not Answered**

Chosen Option : --

- Q.15** Let A be a square matrix. Then,
- (A) $A + A^T$ is a symmetric matrix
 - (B) $A - A^T$ is a skew-symmetric matrix
 - (C) AA^T is a skew-symmetric matrix
 - (D) $A^T A$ is a symmetric matrix

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

- (1) (A), (B) Only
- (2) (B), (C), (D) Only
- (3) (A), (C), (D) Only
- (4) (A), (B), (D) Only

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710653**

Option 1 ID : **21280742609**

Option 2 ID : **21280742610**

Option 3 ID : **21280742611**

Option 4 ID : **21280742612**

Status : **Not Answered**

Chosen Option : --

- Q.16** Match List - I with List - II.

Given that $\sum p_0 q_0 = 150$, $\sum p_0 q_1 = 80$, $\sum p_1 q_0 = 240$, $\sum p_1 q_1 = 200$.

List - I

List - II

- | | |
|--------------------------|-----------|
| (A) Laspeyre's index | (I) 160 |
| (B) Paasche's index | (II) 200 |
| (C) Fesher's index | (III) 205 |
| (D) Dorbish and Bowley's | (IV) 250 |

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

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

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710662**

Option 1 ID : **21280742645**

Option 2 ID : **21280742646**

Option 3 ID : **21280742647**

Option 4 ID : **21280742648**

Status : **Not Answered**

Chosen Option : --

Q.17 The set of positive integers less than 50 forming the equivalence class of 6 modulo 9 is given by :

- (1) $[6] = \{6, 15, 24, 33, 42, 50\}$
- (2) $[6] = \{6, 15, 24, 33, 42\}$
- (3) $[6] = \{6, 15, 24, 33\}$
- (4) $[6] = \{6, 15, 24\}$

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710647**

Option 1 ID : **21280742585**

Option 2 ID : **21280742586**

Option 3 ID : **21280742587**

Option 4 ID : **21280742588**

Status : **Not Answered**

Chosen Option : --

Q.18 Corner points of the feasible region for an LPP are : (0, 2), (3, 0), (6, 0), (6, 8) and (0, 5). Let $z = 4x + 6y$ be the objective function. Then, Max z – Min z is equal to :

- (1) 70
- (2) 72
- (3) 60
- (4) 62

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710675**

Option 1 ID : **21280742697**

Option 2 ID : **21280742698**

Option 3 ID : **21280742699**

Option 4 ID : **21280742700**

Status : **Not Answered**

Chosen Option : --

Q.19 $5^{100} \pmod{9} =$

- (1) 4
- (2) 2
- (3) 1
- (4) 0

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710649**

Option 1 ID : **21280742593**

Option 2 ID : **21280742594**

Option 3 ID : **21280742595**

Option 4 ID : **21280742596**

Status : **Not Answered**

Chosen Option : --

Q.20

If $x^3 + y^3 = xy$, then $\frac{dy}{dx}$ is equal to :

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

(2) $\frac{y - 3x^2}{3y^2 - x}$

(3) $\frac{y + 3x^2}{3y^2 - x}$

(4) $\frac{3y - x^2}{y^2 - 3x}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**Question ID : **21280710654**Option 1 ID : **21280742613**Option 2 ID : **21280742614**Option 3 ID : **21280742615**Option 4 ID : **21280742616**Status : **Not Answered**

Chosen Option : --

Q.21 The probability distribution of a random variable X is given below :

X	0	1	2	3	4
P(X)	0.1	0.25	0.3	0.2	0.15

Then, $\text{Var}\left(\frac{X}{2}\right)$ is :

- (1) 0.368751
- (2) 0.361875
- (3) 0.36758
- (4) 0.369822

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710657**

Option 1 ID : **21280742625**

Option 2 ID : **21280742626**

Option 3 ID : **21280742627**

Option 4 ID : **21280742628**

Status : **Not Answered**

Chosen Option : --

Q.22 The effective rate that is equivalent to a nominal rate of 12% compounded quarterly is :

- (1) 10.55 %
- (2) 12.55 %
- (3) 12.25 %
- (4) 11.55 %

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710669**

Option 1 ID : **21280742673**

Option 2 ID : **21280742674**

Option 3 ID : **21280742675**

Option 4 ID : **21280742676**

Status : **Not Answered**

Chosen Option : --

Q.23 A company intends to create a sinking fund to replace at the end of 20th year assets costing ₹ 2,50,000. Then the value of the amount to be retained out of profits every year if the interest rate is 5% is : (Given $(1.05)^{20} = 2.6532$)

- (1) ₹ 7,156.09
- (2) ₹ 7,599.09
- (3) ₹ 7,561.09
- (4) ₹ 7,651.09

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710671**

Option 1 ID : **21280742681**

Option 2 ID : **21280742682**

Option 3 ID : **21280742683**

Option 4 ID : **21280742684**

Status : **Not Answered**

Chosen Option : --

Q.24 The demand function of a monopolist is given by $p = 1500 - 2x - x^2$, then value of marginal revenue when $x = 20$ is :

- (1) 220
- (2) 200
- (3) 240
- (4) 280

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710655**

Option 1 ID : **21280742617**

Option 2 ID : **21280742618**

Option 3 ID : **21280742619**

Option 4 ID : **21280742620**

Status : **Not Answered**

Chosen Option : --

Q.25 A container contains 50 litres of milk. From this container 10 litres of milk was taken out and replaced by water. This process is repeated two more times. How much milk is now left in the container ?

- (1) 25.6 litres
- (2) 25 litres
- (3) 26.5 litres
- (4) 20.6 litres

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710646**

Option 1 ID : **21280742581**

Option 2 ID : **21280742582**

Option 3 ID : **21280742583**

Option 4 ID : **21280742584**

Status : **Not Answered**

Chosen Option : --

Q.26

If $-\frac{1}{3x-5} \leq 0$, then :

(1) $x > \frac{5}{3}$

(2) $x \geq \frac{5}{3}$

(3) $x < \frac{5}{3}$

(4) $x \leq \frac{5}{3}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : MCQ

Question ID : 21280710648

Option 1 ID : 21280742589

Option 2 ID : 21280742590

Option 3 ID : 21280742591

Option 4 ID : 21280742592

Status : Not Answered

Chosen Option : --

Q.27

The minimum value of $ax+by$, where $xy=c^2$ and a, b, c are positive, is :

(1) $2b\sqrt{ac}$

(2) $2a\sqrt{bc}$

(3) $2c\sqrt{ab}$

(4) $2\sqrt{abc}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : MCQ

Question ID : 21280710651

Option 1 ID : 21280742601

Option 2 ID : 21280742602

Option 3 ID : 21280742603

Option 4 ID : 21280742604

Status : Not Answered

Chosen Option : --

Q.28 Pipes A and B can fill a tank in 5 hours and 6 hours respectively. Another Pipe can empty the full tank in 30 hours. If all three pipes are opened together, then the tank will be filled in :

- (1) 160 minutes
- (2) 180 minutes
- (3) 150 minutes
- (4) 140 minutes

Options 1. 1

- 2. 2
- 3. 3
- 4. 4

Question Type : **MCQ**

Question ID : **21280710661**

Option 1 ID : **21280742641**

Option 2 ID : **21280742642**

Option 3 ID : **21280742643**

Option 4 ID : **21280742644**

Status : **Not Answered**

Chosen Option : --

Q.29 Match List - I with List - II.

List - I

(Functions)

- (A) $f(x) = -x^2, x \in (-\infty, \infty)$
- (B) $f(x) = -x^2 + 1, x \in (-\infty, \infty)$
- (C) $f(x) = x + 1, x \in [0, 6]$
- (D) $f(x) = x^3, x \in [0, 2]$

List - II

(Maximum value)

- (I) 8
- (II) 7
- (III) 1
- (IV) 0

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

- (1) (A)-(IV), (B)-(III), (C)-(II), (D)-(I)
- (2) (A)-(III), (B)-(II), (C)-(I), (D)-(IV)
- (3) (A)-(II), (B)-(I), (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 : **21280710650**

Option 1 ID : **21280742597**

Option 2 ID : **21280742598**

Option 3 ID : **21280742599**

Option 4 ID : **21280742600**

Status : **Not Answered**

Chosen Option : --

Q.30 Which of the following statements are correct ?

(A) $\text{var}(aX + b) = a^2 \text{var}(X)$

(B) $\text{var}(X) = E(X^2) - \{E(X)\}^2$

(C) $E(aX + b) = aE(X) + b$

(D) $E(X) = \sum_{i=1}^n p_i x_i^2$

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

(1) (A), (C) Only

(2) (A), (B) Only

(3) (A), (B), (C) Only

(4) (A), (C), (D) Only

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710664**

Option 1 ID : **21280742653**

Option 2 ID : **21280742654**

Option 3 ID : **21280742655**

Option 4 ID : **21280742656**

Status : **Not Answered**

Chosen Option : --

Q.31 A motor boat goes 20 km downstream and comes back to the starting point in 6 hours. If the speed of the boat in still water is 12 km/h, then the speed of the stream is :

(1) 10 km/h

(2) 15 km/h

(3) 8 km/h

(4) 6 km/h

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710676**

Option 1 ID : **21280742701**

Option 2 ID : **21280742702**

Option 3 ID : **21280742703**

Option 4 ID : **21280742704**

Status : **Not Answered**

Chosen Option : --

Q.32

If $x = 6t^2$, $y = \frac{6}{t^2}$, then $\frac{d^2y}{dx^2}$ is equal to :

(1) $-12 t^4$

(2) $\frac{1}{3 t^6}$

(3) $\frac{1}{12 t^5}$

(4) $-\frac{1}{t^4}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : MCQ

Question ID : 21280710677

Option 1 ID : 21280742705

Option 2 ID : 21280742706

Option 3 ID : 21280742707

Option 4 ID : 21280742708

Status : Not Answered

Chosen Option : --

Q.33 If X has a Poisson distribution such that $P(X=1) = P(X=2)$ then $P(X=3)$ is :

(1) $\frac{4}{3} e^{-2}$

(2) $\frac{1}{3} e^{-3}$

(3) $\frac{2}{3} e^{-2}$

(4) $\frac{5}{3} e^{-4}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : MCQ

Question ID : 21280710678

Option 1 ID : 21280742709

Option 2 ID : 21280742710

Option 3 ID : 21280742711

Option 4 ID : 21280742712

Status : Not Answered

Chosen Option : --

Q.34 Consider the following hypothesis test :

$$\mu_o : \mu \leq 26$$

$$\mu_a : \mu > 26$$

A sample of 36 is provided with a sample mean of 25.75. The population standard deviation is 3.
The value of the test statistic is :

- (1) 1.5
- (2) -0.5
- (3) 0.75
- (4) -0.25

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710679**

Option 1 ID : **21280742713**

Option 2 ID : **21280742714**

Option 3 ID : **21280742715**

Option 4 ID : **21280742716**

Status : **Not Answered**

Chosen Option : --

Q.35 The maximum value of $Z=3x+4y$ subjected to the constraints $3x+7y \leq 21$, $5x+2y \leq 10$; $x, y \geq 0$ is :

(1) $\frac{275}{29}$

(2) $\frac{237}{19}$

(3) $\frac{107}{29}$

(4) $\frac{384}{29}$

Options 1. 1

2. 2

3. 3

4. 4

Question Type : **MCQ**

Question ID : **21280710680**

Option 1 ID : **21280742717**

Option 2 ID : **21280742718**

Option 3 ID : **21280742719**

Option 4 ID : **21280742720**

Status : **Not Answered**

Chosen Option : --