CUET UG - 2022
(CANDIDATE RESPONSE SHEET)

Paper/Subject	MATHEMATICS/APPLIED MATHEMATICS
Exam Date	23 Aug 2022
Exam Slot	2

Question ID:1103951
Section Name:COMPULSORY
Question:

If $A=\begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix}$ and A_{ij} is cofactors of a_{ij}, then value of $|A|$ is :

(1) $a_{11}A_{31}+a_{12}A_{32}+a_{13}A_{33}$
(2) $a_{11}A_{11}+a_{12}A_{21}+a_{13}A_{31}$
(3) $a_{21}A_{11}+a_{22}A_{12}+a_{23}A_{13}$
(4) $a_{11}A_{11}+a_{21}A_{21}+a_{31}A_{31}$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**D**

Question ID:1103952
Section Name:COMPULSORY
Question:

If A is a non-singular matrix and $A^2-A+I=0$, then the inverse of A is :

(1) A^{-2}
(2) $A+I$
(3) $I-A$
(4) $A-I$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**D**

Question ID:1103953
Section Name:COMPULSORY

Question:

Match **List - I** with **List - II** for Matrix $A = \begin{bmatrix} 1 & -1 & 2 \\ 2 & 3 & 5 \\ -2 & 0 & 1 \end{bmatrix}$.

	List - I		**List - II**
(A)	$\lvert A \rvert$	(I)	$\frac{8}{27}$
(B)	$\lvert A^{-1} \rvert$	(II)	$\frac{1}{27}$
(C)	$\lvert \text{adj } A \rvert$	(III)	27
(D)	$\lvert 2A^{-1} \rvert$	(IV)	729

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

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

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

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

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

A 1

B 2

C 3

D 4

Answer Given By Candidate:**C**

Question ID:1103954
Section Name:COMPULSORY
Question:

The slope $\left(\frac{dy}{dx}\right)$ of the tangent to the cuve $x = t^2 + 3t - 8$, $y = 2t^2 - 2t - 5$ at the point $(2, -1)$, is :

(1) $\frac{22}{7}$

(2) $\frac{6}{7}$

(3) $\frac{7}{6}$

(4) $\frac{-6}{7}$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**D**

Question ID:1103955
Section Name:COMPULSORY
Question:

Which of the following are true ?

(A) A function $f(x)=x^2$ is increasing in $[-1, 1]$

(B) If $f(x)=x^n$, then n^{th} derivative is equal to n!

(C) $f(x)=x^2-2x+4$ has a single global maxima/minima

(D) x-axis is tangent on $y=x^2$

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

(1) (A), (B) and (C) only

(2) (B), (C) and (D) only

(3) (C), (D) and (A) only

(4) (D), (A) and (B) only

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103956
Section Name:COMPULSORY
Question:

If $\int_0^k \frac{1}{2+8x^2}\,dx = \frac{\pi}{16}$ then the value of k is :

(1) 1

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

(3) 2

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

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103957
Section Name:COMPULSORY

Question:

$$\int \frac{dx}{1+e^x} =$$

(1) $\log(e^x - e^{-x}) + C$

(2) $\log\ (e^x + e^{-x}) + C$

(3) $\log\ (1 - e^{-x}) + C$

(4) $-\log(1 + e^{-x}) + C$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**C**

Question ID:1103958
Section Name:COMPULSORY
Question:

Area of the region bounded by the curve $y^2 = 4x$, y - axis and line $y = 3$ is :

(1) 2 sq. units

(2) $\frac{9}{4}$ sq. units

(3) $\frac{9}{3}$ sq. units

(4) $\frac{9}{2}$ sq. units

A 1

B 2

C 3

D 4

Answer Given By Candidate:**B**

Question ID:1103959
Section Name:COMPULSORY
Question:

The sum of order and degree of differential equation $\left(\frac{ds}{dt}\right)^4 + 3s\frac{d^2s}{dt^2} = 0$, is :

(1) 2

(2) 3

(3) 4

(4) 5

A 1

B 2

C 3

D 4

Answer Given By Candidate:**B**

Question ID:1103960
Section Name:COMPULSORY
Question:

Match **List - I** with **List - I.**

List - I		**List - II**	
(A)	solution of $(x^2+1)\frac{dy}{dx} = x$	(I)	3
(B)	solution of $\frac{dy}{dx} = e^x$	(II)	1
(C)	order of $\frac{d^3y}{dx^3} = 0$	(III)	$y = e^x + C$
(D)	degree of $x^2\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^2 = 0$	(IV)	$y=\frac{1}{2}\log(x^2+1)+C$

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

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

A 1

B 2

C 3

D 4

Answer Given By Candidate:**C**

Question ID:1103961
Section Name:COMPULSORY
Question:

The differential equation, representing family of curves $y = ae^{2x} + be^{-3x}$ (where a and b are arbitrary constants) is :

(1) $\frac{d^2y}{dx^2} + 6y = 0$

(2) $\frac{d^2y}{dx^2} + \frac{dy}{dx} - 6y = 0$

(3) $\frac{d^2y}{dx^2} + \frac{dy}{dx} + 6y = 0$

(4) $\frac{d^2y}{dx^2} - \frac{dy}{dx} - 6y = 0$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103962
Section Name:COMPULSORY
Question:

A man is known to speak truth 3 out of 4 times. He throws a coin three times and reports that a single head appears. The probability that actually a single head appears is :

(1) $\frac{5}{14}$

(2) $\frac{9}{14}$

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

(4) $\frac{5}{6}$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103963
Section Name:COMPULSORY
Question:

The value of $\int_{-1}^{1} e^{|x|}\,dx$ is :

(1) $3(e-1)$
(2) $2(e-1)$
(3) $2(e+1)$
(4) $e+1$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**D**

Question ID:1103964
Section Name:COMPULSORY

Question:

Find the value of k, where the table given below

x	2	3	4	5
$P(X=x)$	$\frac{5}{k}$	$\frac{7}{k}$	$\frac{9}{k}$	$\frac{11}{k}$

represents the probability distribution.

(1) 8
(2) 16
(3) 32
(4) 48

A 1

B 2

C 3

D 4

Answer Given By Candidate:**D**

Question ID:1103965
Section Name:COMPULSORY
Question:

The point at which $z=3x+4y$ attains maximum value subject to the constraints $x+y\leq 40$, $x+2y\leq 60$, $x, y\geq 0$ is :

(1) (60, 0)
(2) (20, 40)
(3) (20, 20)
(4) (40, 0)

A 1

B 2

C 3

D 4

Answer Given By Candidate:**B**

Question ID:1103966
Section Name:MATHEMATICS CORE
Question:

The number of one-one functions from set {a, b, c} to itself are :

(1) 3
(2) 4
(3) 6
(4) 9

A 1

B 2

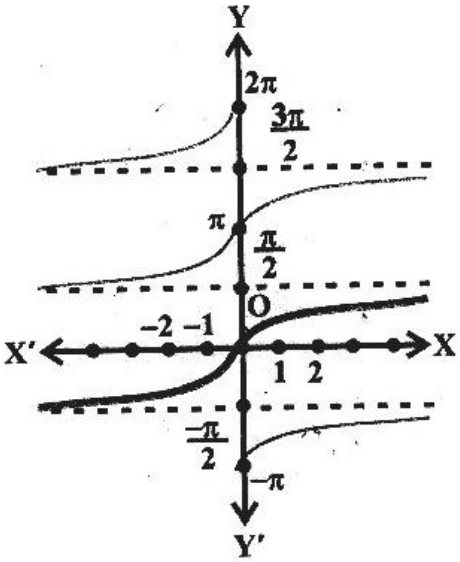
C 3

D 4

Answer Given By Candidate:**A**

Question ID:1103967
Section Name:MATHEMATICS CORE
Question:

Which inverse trigonometric function does following graph represent ?



(1) $\sec^{-1}x$
(2) $\text{cosec}^{-1}x$
(3) $\tan^{-1}x$
(4) $\cot^{-1}x$

A 1
B 2
C 3
D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103968
Section Name:MATHEMATICS CORE
Question:

The value of $2\sin^{-1}\left(\frac{\sqrt{3}}{2}\right) + \sec^{-1}\left(\frac{2}{\sqrt{3}}\right) + \cot^{-1}\left(\frac{-1}{\sqrt{3}}\right)$ is :

(1) $\frac{7\pi}{6}$
(2) $\frac{5\pi}{6}$
(3) $\frac{3\pi}{2}$
(4) 0

A 1

B 2

C 3

D 4

Answer Given By Candidate:**B**

Question ID:1103969
Section Name:MATHEMATICS CORE
Question:

The relation R on the set $\mathbb{R}$ of real numbers defined by $R=\{(x, y) : y=x+2\}$ is :

(A) Reflexive but not symmetric
(B) Neither reflexive nor symmetric
(C) Reflexive but not transitive
(D) Neither reflexive nor transitive
(E) Not reflexive but symmetric

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

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

A 1

B 2

C 3

D 4

Answer Given By Candidate:**C**

Question ID:1103970
Section Name:MATHEMATICS CORE
Question:

If A is square matrix of order 3 and $|A|=6$. If $|2\text{adj }(3\text{ adj }(4A))|=2^a3^b$, then $a+b$ is equal to :

(1) 17
(2) 31
(3) 41
(4) 71

A 1

B 2

C 3

D 4

Answer Given By Candidate:**B**

Question ID:1103971
Section Name:MATHEMATICS CORE

Question:

The differentiation of $\cos^2 x$ w.r.to $e^{\sin x}$ is :

(1) $\frac{2\sin x}{e^{\sin x}}$

(2) $\frac{-2\sin x}{e^{\sin x}}$

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

(4) $\frac{2\cos x}{e^{\cos x}}$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**B**

Question ID:1103972
Section Name:MATHEMATICS CORE
Question:

Given $f(x) = |1 - x + |x||$, pick the statements that are true.

(A) $f(x)$ is continuous

(B) $f(x)$ is not differentiable at $x = 0$

(C) $f(x)$ is differentiable everywhere

(D) $f(x)$ is not differentiable at $x = 1/2$

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

(1) (A) and (C) only

(2) (A) and (D) only

(3) (A) and (B) only

(4) (C) only

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103973
Section Name:MATHEMATICS CORE
Question:

The maximum value of $f(x) = 5\cos 3x + 12\sin 3x$ is :

(1) $\sqrt{12}$

(2) 13

(3) 12

(4) $\sqrt{13}$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**C**

Question ID:1103974
Section Name:MATHEMATICS CORE
Question:

If $f(x) = \begin{cases} a\sin\frac{\pi}{2}(x+1); & x \le 0 \\ \frac{\tan x - \sin x}{x^3}; & x > 0 \end{cases}$

is continuous at $x = 0$, then a is equal to :

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

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

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

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

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103975
Section Name:MATHEMATICS CORE
Question:

$$\int \frac{1}{1+\sin x}\,dx =$$

(1) $\tan x - \sec x + C$

(2) $\tan x + \sec x + C$

(3) $-\cot x + \operatorname{cosec} x + C$

(4) $-\cot x - \operatorname{cosec} x + C$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103976
Section Name:MATHEMATICS CORE

Question:

Match **List - I** with **List - I.**

	List - I		**List - II**
(A)	$\int \frac{dx}{x^2-a^2}$	(I)	$\log\left\|x+\sqrt{x^2+a^2}\right\| + C$
(B)	$\int \frac{dx}{a^2-x^2}$	(II)	$\frac{1}{2a}\log\left\|\frac{x-a}{x+a}\right\| + C$
(C)	$\int \frac{dx}{\sqrt{x^2+a^2}}$	(III)	$\frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left\|x+\sqrt{x^2+a^2}\right\| + C$
(D)	$\int \sqrt{x^2+a^2}\, dx$	(IV)	$\frac{1}{2a}\log\left\|\frac{a+x}{a-x}\right\| + C$

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

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

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

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

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

A 1

B 2

C 3

D 4

Answer Given By Candidate:**A**

Question ID:1103977
Section Name:MATHEMATICS CORE
Question:

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

(1) $\tan x + C$

(2) $\cot x + C$

(3) $\log(\tan x) + C$

(4) $\log(\cot x) + C$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**A**

Question ID:1103978
Section Name:MATHEMATICS CORE

Question:

If $P(A) = \frac{1}{2}$, $P(B) = \frac{1}{3}$, and $P(A \cap B) = \frac{1}{15}$, then value of $P(A' \cap B')$ is :

(1) $\frac{7}{30}$

(2) $\frac{7}{15}$

(3) $\frac{5}{24}$

(4) $\frac{5}{32}$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**A**

Question ID:1103979
Section Name:MATHEMATICS CORE
Question:

The general solution of the differential equation $y \log y \, dx - x \, dy = 0$ is (where C is arbitrary constant) :

(1) $x = C^y$

(2) $y = C^x$

(3) $y = C^{x^2}$

(4) $y = C\sqrt{x}$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103980
Section Name:MATHEMATICS CORE

Question:

The solution of differential equations $\frac{dy}{dx} + \frac{y}{x} = \cos x + \frac{\sin x}{x}$ is :

(1) $x\frac{dy}{dx} + y = x\cos x + \sin x$

(2) $y = \sin x + \frac{C}{x^2}$

(3) $y = \sin x + \frac{C}{x}$

(4) $y = \cos x - \frac{C}{x}$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103981
Section Name:MATHEMATICS CORE
Question:

$\int_0^{100\pi} \left|\sin\frac{x}{2}\right| dx =$

(1) 100π

(2) 200π

(3) $\pi/2$

(4) 200

A 1

B 2

C 3

D 4

Answer Given By Candidate:**B**

Question ID:1103982
Section Name:MATHEMATICS CORE

Question:

A vector $\vec{r}$ has length 21 and its direction ratios are proportional to 2, -3, 6 then $\vec{r}$ is equal to :

(1) $\frac{2}{7}\vec{i} - \frac{3}{7}\vec{j} + \frac{6}{7}\vec{k}$

(2) $6\vec{i} - 9\vec{j} + 18\vec{k}$

(3) $2\vec{i} - 3\vec{j} + 6\vec{k}$

(4) $21\left(2\vec{i} - 3\vec{j} + 6\vec{k}\right)$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**D**

Question ID:1103983
Section Name:MATHEMATICS CORE
Question:

The angle between $\vec{a}$ and $\vec{b}$, where $\left|\vec{a}\right| = \sqrt{3}$ and $\left|\vec{b}\right| = 2$ and $\vec{a} \cdot \vec{b} = \sqrt{6}$, is :

(1) $\pi/4$
(2) $\pi/3$
(3) $\pi/6$
(4) 0

A 1

B 2

C 3

D 4

Answer Given By Candidate:**B**

Question ID:1103984
Section Name:MATHEMATICS CORE

Question:

The two lines given by $\vec{r}=\hat{i}+\hat{j}+\lambda(2\hat{i}-\hat{j}+\hat{k})$ and $\vec{r}=(2\hat{i}+\hat{j}-\hat{k})+\mu(4\hat{i}-2\hat{j}+2\hat{k})$, which of the followings are true about these two line.

(A) These lines are perpendicular

(B) These line are parallel

(C) The shortest distance between given lines is zero

(D) The shortest distance between given lines is $\frac{\sqrt{11}}{\sqrt{6}}$

(E) The shortest distance between given lines is $\sqrt{11}$

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

(1) (B) and (D) only

(2) (B) and (E) only

(3) (A) and (C) only

(4) (B) and (C) only

A 1

B 2

C 3

D 4

Answer Given By Candidate:**B**

Question ID:1103985
Section Name:MATHEMATICS CORE
Question:

Let vector equation of a plane be $\vec{r}\cdot\left(2\hat{i}+\hat{j}+2\hat{k}\right)=24$.

(A) The distance of the plane from the origin is 24.

(B) The distance of the plane from the origin is 0.

(C) The direction cosines of normal to the plane are <2, 1, 2>.

(D) The direction cosines of normal to the plane are $\left\langle\frac{2}{3},\frac{1}{3},\frac{2}{3}\right\rangle$.

(E) The distance of the plane from the origin is 8.

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

(1) (A) and (C) only

(2) (D) and (E) only

(3) (B) and (C) only

(4) (C) and (E) only

A 1

B 2

C 3

D 4

Answer Given By Candidate:**C**

Question ID:1103986
Section Name:MATHEMATICS CORE
Question:

The co-ordinates of the foot of the perpendicular drawn from the origin to the plane $5x+2y+2z=1$ are :

(1) (5, 2, 2)

(2) $\left(\frac{-5}{\sqrt{33}}, \frac{-2}{\sqrt{33}}, \frac{-2}{\sqrt{33}}\right)$

(3) $\left(\frac{5}{33}, \frac{2}{33}, \frac{2}{33}\right)$

(4) (10, 4, 4)

A 1

B 2

C 3

D 4

Answer Given By Candidate:C

Question ID:1103987
Section Name:MATHEMATICS CORE
Question:

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

List - I		List - II	
(A)	Cartesion equation of y axis	(I)	$\frac{x-0}{0}=\frac{y-0}{0}=\frac{z-0}{1}$
(B)	Vector equation of line $\frac{x-5}{3}=\frac{y+4}{7}=\frac{z-6}{2}$	(II)	$\vec{r}=\left(5\hat{i}-4\hat{j}+6\hat{k}\right)+\lambda\left(3\hat{i}+7\hat{j}+2\hat{k}\right)$
(C)	Cartesion equation of z axis	(III)	$\frac{x-0}{0}=\frac{y-0}{1}=\frac{z-0}{0}$
(D)	Vector equation of line $\frac{x-3}{5}=\frac{y-7}{-4}=\frac{z-2}{6}$	(IV)	$\vec{r}=\left(3\hat{i}+7\hat{j}+2\hat{k}\right)+\mu\left(5\hat{i}-4\hat{j}+6\hat{k}\right)$

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

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

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

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

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

A 1

B 2

C 3

D 4

Answer Given By Candidate:**B**

Question ID:1103988
Section Name:MATHEMATICS CORE
Question:

The value of λ, so that vectors $2\hat{i}-\lambda\hat{j}+4\hat{k}$, $\hat{i}+\hat{j}-\hat{k}$, and $-2\hat{i}+3\hat{j}+7\hat{k}$ are co-planer, is :

(1) 1
(2) -1
(3) 7
(4) -8

A 1

B 2

C 3

D 4

Answer Given By Candidate:**D**

Question ID:1103989
Section Name:MATHEMATICS CORE
Question:

A random variable X has the probability function $P(X=x)=\begin{cases} k; & \text{if } x=0 \\ 3k; & \text{if } x=1 \\ 5k; & \text{if } x=2 \end{cases}$, where k is a constant. Then the value of k is :

(1) $\frac{1}{6}$
(2) $\frac{1}{9}$
(3) $\frac{1}{8}$
(4) $\frac{1}{5}$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103990
Section Name:MATHEMATICS CORE

Question:

If the corner points of the feasible region for an LPP are (0, 2) (3, 0) (6, 0) (6, 8) (0, 5) then the minimum value of the objective function $z = 4x + 6y$ occurs at :

(1) (0, 2) only

(2) (3, 0) only

(3) every point on the line segment joining (0, 2) and (3, 0)

(4) mid point of the line segment joining the points (0, 2) and (3, 0)

A 1

B 2

C 3

D 4

Answer Given By Candidate:**C**

Question ID:1103991
Section Name:MATHEMATICS CORE
Question:

A team of 5 persons goes on a rescue operation in a helicopter. They know the coordinates of places from where people need to be rescued. These are P(1, 1, 0), Q(1, 2, 1) and R(−2, 2, −1). They decide to stop at Point A (2, 1, 3). From A, 3 team members are dropped on ground using a rope. They reach the point B at the ground level so that distance AB is shortest from the plane passing through P ,Q and R.

Based on the above information, answer the following :

Find the equation of plane passing through the points P(1, 1, 0), Q(1, 2, 1) and R(−2, 2, −1) Choose the correct option.

(1) $2x + 3y + 3z = 5$

(2) $2x + 3y - 3z = 5$

(3) $3x + 2y + 2z = 5$

(4) $3x - 2y + 2z = 5$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103992
Section Name:MATHEMATICS CORE

Question:

A team of 5 persons goes on a rescue operation in a helicopter. They know the coordinates of places from where people need to be rescued. These are P(1, 1, 0), Q(1, 2, 1) and R(−2, 2, −1). They decide to stop at Point A (2, 1, 3). From A, 3 team members are dropped on ground using a rope. They reach the point B at the ground level so that distance AB is shortest from the plane passing through P ,Q and R.

Based on the above information, answer the following :

The equation of line AB is :

(1) $\frac{x-2}{2} = \frac{y-1}{3} = \frac{z-3}{-3}$

(2) $\frac{x-2}{2} = \frac{y-1}{3} = \frac{z+3}{3}$

(3) $\frac{x-2}{2} = \frac{y-3}{1} = \frac{z+3}{3}$

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

A 1

B 2

C 3

D 4

Answer Given By Candidate:**A**

Question ID:1103993
Section Name:MATHEMATICS CORE
Question:

A team of 5 persons goes on a rescue operation in a helicopter. They know the coordinates of places from where people need to be rescued. These are P(1, 1, 0), Q(1, 2, 1) and R(−2, 2, −1). They decide to stop at Point A (2, 1, 3). From A, 3 team members are dropped on ground using a rope. They reach the point B at the ground level so that distance AB is shortest from the plane passing through P ,Q and R.

Based on the above information, answer the following :

How much distance a team member has to cover to reach point B from the helicopter ?

(1) 7 units

(2) $\frac{7}{\sqrt{22}}$ units

(3) $\frac{7}{22}$ units

(4) $\frac{1}{22}$ units

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103994
Section Name:MATHEMATICS CORE
Question:

A team of 5 persons goes on a rescue operation in a helicopter. They know the coordinates of places from where people need to be rescued. These are P(1, 1, 0), Q(1, 2, 1) and R(−2, 2, −1). They decide to stop at Point A (2, 1, 3). From A, 3 team members are dropped on ground using a rope. They reach the point B at the ground level so that distance AB is shortest from the plane passing through P ,Q and R.

Based on the above information, answer the following :

What are the coordinates of point B ?

(1) $\left(\frac{7}{22}, \frac{14}{22}, \frac{14}{22}\right)$

(2) $\left(\frac{59}{22}, \frac{43}{22}, \frac{45}{22}\right)$

(3) $\left(\frac{29}{11}, \frac{43}{22}, \frac{45}{22}\right)$

(4) $\left(\frac{7}{11}, \frac{7}{22}, \frac{-21}{22}\right)$

A 1

B 2

C 3

D 4

Answer Given By Candidate:**Not Attempted**

Question ID:1103995
Section Name:MATHEMATICS CORE

Question:

A team of 5 persons goes on a rescue operation in a helicopter. They know the coordinates of places from where people need to be rescued. These are P(1, 1, 0), Q(1, 2, 1) and R(−2, 2, −1). They decide to stop at Point A (2, 1, 3). From A, 3 team members are dropped on ground using a rope. They reach the point B at the ground level so that distance AB is shortest from the plane passing through P ,Q and R.

Based on the above information, answer the following :

The rescue team can rescue people at the same plane (as found previously). If there are more people at the following points, which of these can be rescued by the team ?

(A) (1, 3, 2)

(B) (1, 1, 1)

(C) $\left(\frac{5}{2}, 1, 1\right)$

(D) $\left(2, \frac{7}{3}, 2\right)$

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

(1) (B) only

(2) (A) and (C) only

(3) (C) and (D) only

(4) (A), (C) and (D) only

A 1

B 2

C 3

D 4

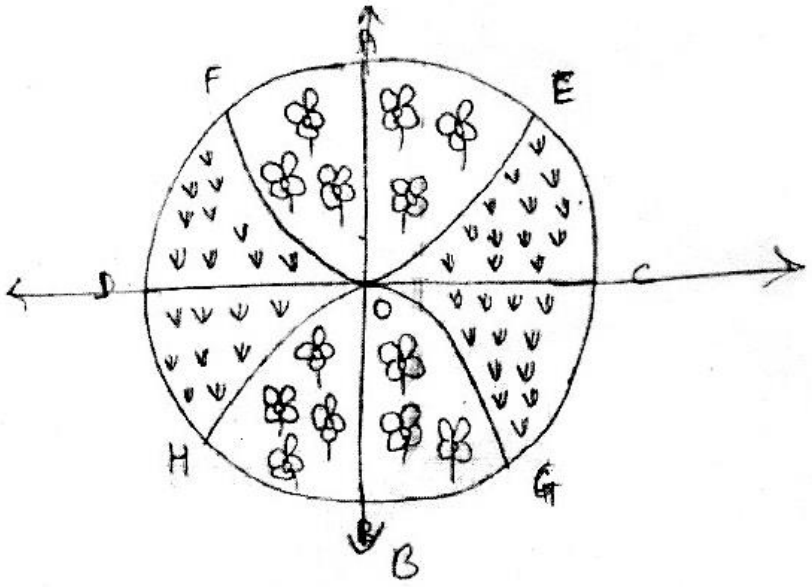
Answer Given By Candidate:**Not Attempted**

Question ID:1103996
Section Name:MATHEMATICS CORE

Question:

Information Given :

A children's park has a circular garden as shown in the figure with DC and AB representing x and y-axis respectively. AB and CD are two cemented walkways of length 70 m each. Areas marked as AEOF and BGOH are flower beds whereas ECGO and FDHO are covered with grass. FOE and HOG are parabolas with focus (0, 6) and (0, −6) respectively.



Based on the information given above answer the questions.

The equations of the curves FOE and HOG are respectively :

(1) $y^2 = 20x$ and $y^2 = -20x$

(2) $y^2 = 5x$ and $y^2 = -5x$

(3) $x^2 = 24y$ and $x^2 = -24y$

(4) $x^2 = 5y$ and $x^2 = -5y$

A 1

B 2

C 3

D 4

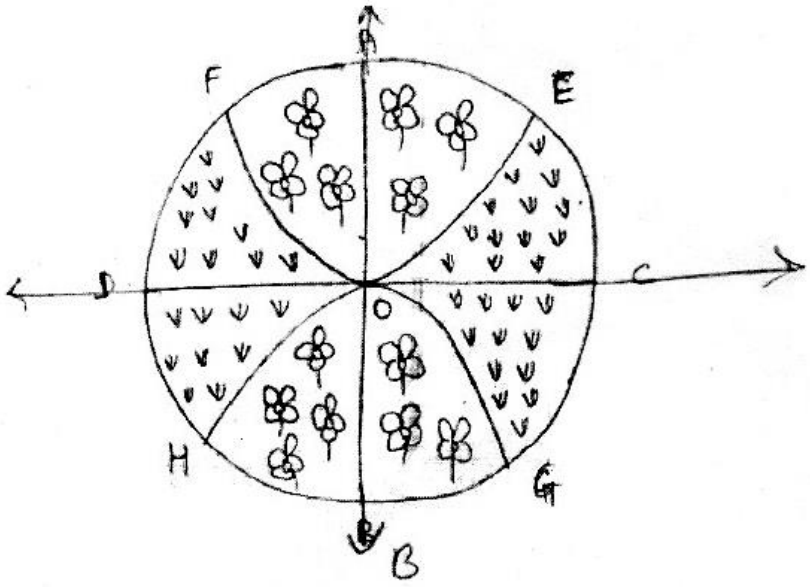
Answer Given By Candidate:**C**

Question ID:1103997
Section Name:MATHEMATICS CORE

Question:

Information Given :

A children's park has a circular garden as shown in the figure with DC and AB representing x and y-axis respectively. AB and CD are two cemented walkways of length 70 m each. Areas marked as AEOF and BGOH are flower beds whereas ECGO and FDHO are covered with grass. FOE and HOG are parabolas with focus (0, 6) and (0, −6) respectively.



Based on the information given above answer the questions.

What is the equation of circle with centre O and radius OC.

(1) $x^2+y^2=25$

(2) $x^2+y^2=250$

(3) $x^2+y^2=500$

(4) $x^2+y^2=1225$

A 1

B 2

C 3

D 4

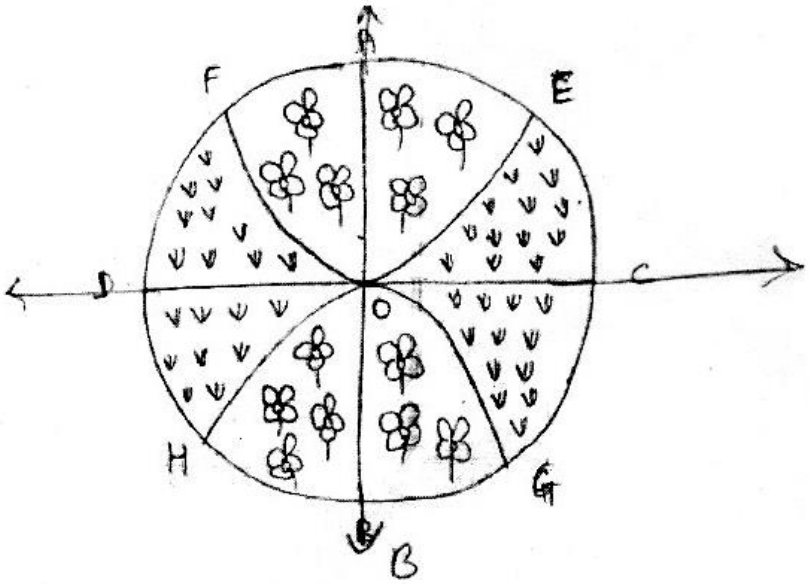
Answer Given By Candidate:**D**

Question ID:1103998
Section Name:MATHEMATICS CORE

Question:

Information Given :

A children's park has a circular garden as shown in the figure with DC and AB representing x and y-axis respectively. AB and CD are two cemented walkways of length 70 m each. Areas marked as AEOF and BGOH are flower beds whereas ECGO and FDHO are covered with grass. FOE and HOG are parabolas with focus (0, 6) and (0, −6) respectively.



Based on the information given above answer the questions.

There is a plan to connect EG and FH through a straight mud path. What will be the equation of both?

(1) $x = 10$ and $x = -10$

(2) $y = 30$ and $y = -30$

(3) $x = 10\sqrt{6}$ and $x = -10\sqrt{6}$

(4) $x = 25$ and $x = -25$

A 1

B 2

C 3

D 4

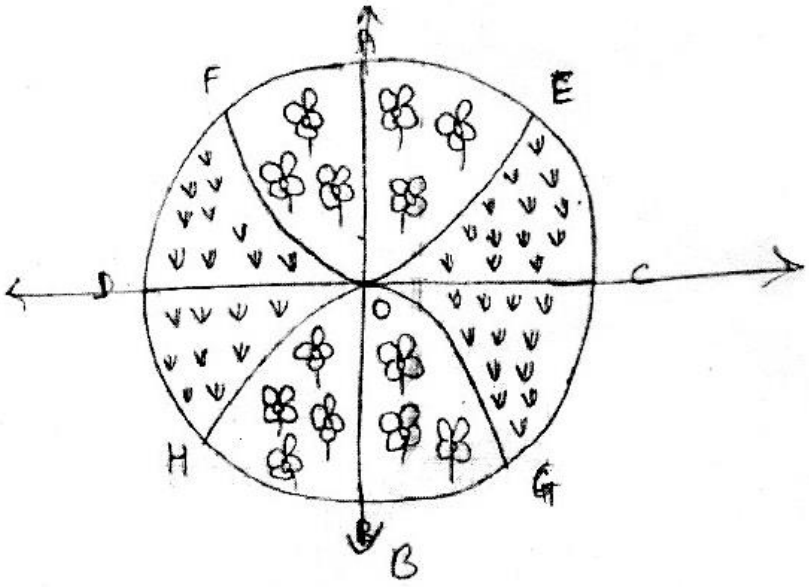
Answer Given By Candidate:**Not Attempted**

Question ID:1103999
Section Name:MATHEMATICS CORE

Question:

Information Given :

A children's park has a circular garden as shown in the figure with DC and AB representing x and y-axis respectively. AB and CD are two cemented walkways of length 70 m each. Areas marked as AEOF and BGOH are flower beds whereas ECGO and FDHO are covered with grass. FOE and HOG are parabolas with focus (0, 6) and (0, −6) respectively.



Based on the information given above answer the questions.

If EFHG is another rectangular path way in the circular garden, then area of EFHG is equal to :

(1) $600\ m^2$

(2) $500\sqrt{6}\ m^2$

(3) $1000\sqrt{6}\ m^2$

(4) $3000 m^2$

A 1

B 2

C 3

D 4

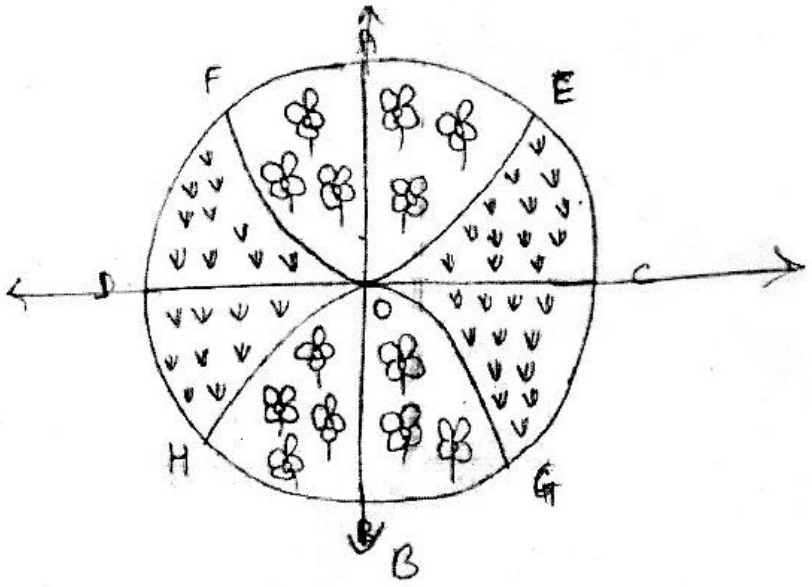
Answer Given By Candidate:**Not Attempted**

Question ID:1104000
Section Name:MATHEMATICS CORE

Question:

Information Given :

A children's park has a circular garden as shown in the figure with DC and AB representing x and y-axis respectively. AB and CD are two cemented walkways of length 70 m each. Areas marked as AEOF and BGOH are flower beds whereas ECGO and FDHO are covered with grass. FOE and HOG are parabolas with focus (0, 6) and (0, −6) respectively.



Based on the information given above answer the questions.

The equation of diagonal EH of rectangular path way EFHG is :

(1) $y = \frac{5}{2\sqrt{6}}x$

(2) $y = \frac{-5}{2\sqrt{6}}x$

(3) $x = \frac{5}{2\sqrt{6}}y$

(4) $x = \frac{-5}{2\sqrt{6}}y$

A 1

B 2

C 3

D 4

Answer Given By Candidate: **Not Attempted**