

LGS GROUP OF COLLEGES

M-3 XII Chapter #7, Exercise 6. 1, 6. 2

(PAPER CODE #1216)

Class: FSC/ICS Part 2

Session: 2023 – 2025

Date: 6-12-2025

Subject: Mathematics	Name: _____	Roll No: <table><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>						
Time: 15 Minutes	Objective Type	Marks = 8						

OBJECTIVE TYPE

Note: Four possible answer A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question. (1 × 8 = 8)

1	$ \cos a \underline{i} + \sin a \underline{j} + 0\underline{k} = \underline{\hspace{2cm}}$ <div style="display: flex; justify-content: space-between;"> A. 0 B. 1 </div> <div style="display: flex; justify-content: space-between;"> C. -1 D. 2 </div>
2	The value of $\underline{k} \cdot \underline{i} \times \underline{j}$ is: <div style="display: flex; justify-content: space-between;"> A. 0 B. 1 </div> <div style="display: flex; justify-content: space-between;"> C. 2 D. -1 </div>
3	Commutative Law holds in: <div style="display: flex; justify-content: space-between;"> A. Vector product B. Cross product in three vectors </div> <div style="display: flex; justify-content: space-between;"> C. Inner product D. None of these </div>
4	If \underline{a} and \underline{b} are two non – zero vectors, then $\underline{a} \times \underline{b} = \underline{\hspace{2cm}}$ <div style="display: flex; justify-content: space-between;"> A. $\underline{b} \times \underline{a}$ B. $\underline{a} \underline{b}$ </div> <div style="display: flex; justify-content: space-between;"> C. $\underline{a} \cdot \underline{b}$ D. $-\underline{b} \times \underline{a}$ </div>
5	The vector \overrightarrow{PQ} through $P(0,5)$ and $Q(-1,-6)$ is : <div style="display: flex; justify-content: space-between;"> A. $(-1,11)$ B. $(-1,-11)$ </div> <div style="display: flex; justify-content: space-between;"> C. $(0,11)$ D. $(1,1)$ </div>
6	Centre of circle $x^2 + y^2 + 4x + 6y + 3 = 0$ is: <div style="display: flex; justify-content: space-between;"> A. $(2, 3)$ B. $(-2, 3)$ </div> <div style="display: flex; justify-content: space-between;"> C. $(-2, -3)$ D. $(2, -3)$ </div>
7	The radius of circle $x^2 + y^2 + 2gx + 2fy + c = 0$ is: <div style="display: flex; justify-content: space-between;"> A. $\sqrt{g^2 + f^2}$ B. $\sqrt{g^2 - f^2 + c}$ </div> <div style="display: flex; justify-content: space-between;"> C. $\sqrt{g^2 + f^2 + c}$ D. $\sqrt{g^2 + f^2 - c}$ </div>
8	The set of all points in the plane that are equally distant from a fixed point is called: <div style="display: flex; justify-content: space-between;"> A. Ellipse B. Parabola </div> <div style="display: flex; justify-content: space-between;"> C. Hyperbola D. Circle </div>

LGS GROUP OF COLLEGES

M-3 XII Chapter #7, Exercise 6.1, 6.2 (PAPER CODE #1216)

Class: FSC/ICS Part 2 Session: 2023 – 2025

Date: 6-12-2025

Subject: Mathematics	Name: _____	Roll No: _____
Time: 45 Minutes		Marks = 27

SUBJECTIVE TYPE SECTION - 1

2. Attempt any THREE SHORT Questions:

(3 × 2 = 6)

i	Find the vector from the point A to the origin where $\overrightarrow{AB} = 4\vec{i} - 2\vec{j}$ and B is the point $(-2, 5)$
ii	$\vec{a} = 3\vec{i} - 2\vec{j} + \vec{k}$, $\vec{b} = \vec{i} + \vec{j}$, find $\vec{b} \times \vec{a}$
iii	Prove that the vectors $\vec{i} - 2\vec{j} + 3\vec{k}$, $-2\vec{i} + 3\vec{j} - 4\vec{k}$ and $\vec{i} - 3\vec{j} + 5\vec{k}$ are coplanar.
iv	If $\vec{a} + \vec{b} + \vec{c} = 0$ then prove that $\vec{a} \times \vec{b} = \vec{b} \times \vec{c} = \vec{c} \times \vec{a}$
v	Find a vector whose magnitude is '4' and is parallel to $2\vec{i} - 3\vec{j} + 6\vec{k}$

3. Attempt any THREE SHORT Questions:

(3 × 2 = 6)

i	Write the general form of an equation of a circle. What is its centre and radius?
ii	Find the length of the tangent drawn from the point $(-5, 4)$ to the circle $5x^2 + 5y^2 - 10x + 15y - 131 = 0$
iii	Check the position of point $(5, 6)$ with respect to the circle $2x^2 + 2y^2 + 12x - 8y + 1 = 0$
iv	Prove that normal of circle passes through the centre of circle.
v	Find the equation of tangent to the circle $x^2 + y^2 = 25$ at $(4, 3)$

SECTION – II

Attempt any three LONG Questions:

(3 × 5 = 15)

4	A force of magnitude 6 units acting parallel to $2\vec{i} - 2\vec{j} + \vec{k}$ displaces the point of application from (1, 2, 3) to (5, 3, 7). Find the work done.
5	Prove by using vector the line segments joining the mid points of sides of quadrilateral taken in order form a parallelogram.
6	Find an equation of the circle passing through the points $A(4,5), B(-4, -3), C(8, -3)$
7	Find the coordinates of the points of intersection of the line $2x + y = 5$ and the circle $x^2 + y^2 + 2x - 9 = 0$. Also find the length of intercepted chord.