ROLL NUMBER				

SET A

INDIAN SCHOOL MUSCAT
SECOND PERIODIC TEST

MATHEMATICS

CLASS: XI
11.01.2023

Sub. Code: 041

Time Allotted: 50mts.
Max .Marks: 20

GENERAL INSTRUCTIONS:

- This question paper has three sections.
- Section A contains 3 MCQ and 1 Assertion Reasoning Question, each of 1 mark.
- Section B contains 3 questions of 2 marks each.
- Section C contains 2 questions of 3 marks each.
- Section D contains 1 Case Based Question of 4 marks.
- All questions are compulsory.

SECTION A

1. The x and y intercepts of the line $2x + 3y - 6 = 0$ are 1
   a) 3 and 2 respectively b) 2 and 3 respectively
   c) -3 and -2 respectively d) $\frac{1}{3}$ and $\frac{1}{2}$ respectively

2. The slope and the point where the line $3x + 4y + 6 = 0$ cuts y-axis are 1
   a) $\frac{2}{3}$ and $\frac{1}{4}$ respectively b) $\frac{1}{3}$ and $\frac{1}{2}$ respectively
   c) $\frac{-1}{3}$ and $\frac{-1}{2}$ respectively d) $\frac{-3}{4}$ and $\frac{-3}{2}$ respectively

3. The line $y + 3x = 0$ 1
   a) passes through the origin and lies in first and third quadrant
   b) does not pass through the origin but lies in first and third quadrant
   c) passes through the origin and lies in second and the fourth quadrant
   d) does not pass through the origin but lies in second and the fourth quadrant

ASSERTION-REASON BASED QUESTION

In question 4, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c)A is true but R is false.
(d) A is false but R is true.

4. **Assertion:** If two lines are parallel then their slopes are equal.
   Reason: Parallel lines make same angle with the positive direction of x axis.
   1

SECTION B

5. Using concept of slope show that the triangle with vertices (-2, 5), (1, 3) and (5, 9) is right angled. 2

6. The line connecting points $M(3, -5)$ and $N(-1, k)$ has equation $4y + 7x = d$. 2
a. Find the slope of the line in terms of k
b. Find the value of k.

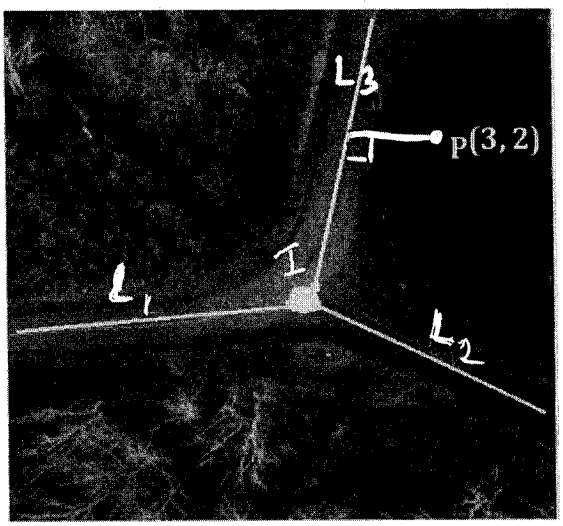
7. Find the distance between the parallel lines $3x - 4y + 7 = 0$ and $3x - 4y + 5 = 0$ 2

SECTION C

8. $A(8, 1)$ and $C(2, 3)$ are opposite vertices of a square $ABCD$. 3
a. Find the midpoint of diagonal AC.
b. Find the equation of diagonal BD

9. Two lines passing through the point (2, 3) intersects each other at an angle of 45° and the equation of one of these lines is $y - 2x + 1 = 0$. Find the equation of the second line satisfying the above condition. Justify why there could be two possible answers. 3
.

10. **CASE BASED QUESTION:**
Two straight roads with equations L_1: $x - y + 1 = 0$ and L_2: $2x - 3y + 5 = 0$ intersects at a point I. A man is standing at a point P(3 , 2) at a distance of $\frac{7}{5} units$ from a third road passing through the intersection of the above two roads.
On the basis of this information answer the following questions:
a) Find the point at which the two roads intersect.
b) Let the slope of line L_3 be **m**, where **m> 1**,then show that the equation of line L_3 is **mx – y + 3 – 2m = 0**.
c) Using the concept of distance of a line from a point, find the value of **m** for the above situation.



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ROLL NUMBER				

SET B

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- All questions are compulsory.

SECTION A

1. The x and y intercepts of the line $3x + 2y - 6 = 0$ are 1
   a) 3 and 2 respectively b) 2 and 3 respectively
   c) -3 and -2 respectively d) $\frac{1}{3}$ and $\frac{1}{2}$ respectively

2. The slope and the point where the line $3x - 4y + 6 = 0$ cuts y-axis are 1
   a) $\frac{3}{4}$ and $\frac{3}{2}$ respectively b) $\frac{1}{3}$ and $\frac{1}{2}$ respectively
   c) $\frac{-1}{3}$ and $\frac{-1}{2}$ respectively d) $\frac{-3}{4}$ and $\frac{-3}{2}$ respectively

3. The line $y - 4x = 0$ 1
   a) passes through the origin and lies in first and third quadrant
   b) does not pass through the origin but lies in first and third quadrant
   c) passes through the origin and lies in second and the fourth quadrant
   d) does not pass through the origin but lies in second and the fourth quadrant

ASSERTION-REASON BASED QUESTION

In question 4, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c)A is true but R is false.
(d) A is false but R is true.

4. **Assertion:** If two lines are perpendicular then their slopes are equal.
   Reason: Parallel lines make same angle with the positive direction of x axis.
   1

SECTION B

5. Using concept of slope show that the triangle with vertices (-2, 5), (1, 3) and (5, 9) is right angled. 2

6. The line connecting points $M(3, -5)$ and $N(-1, n)$ has equation $4y + 7x = d$. 2
a. Find the slope of the line in terms of n.
b. Find the value of n.

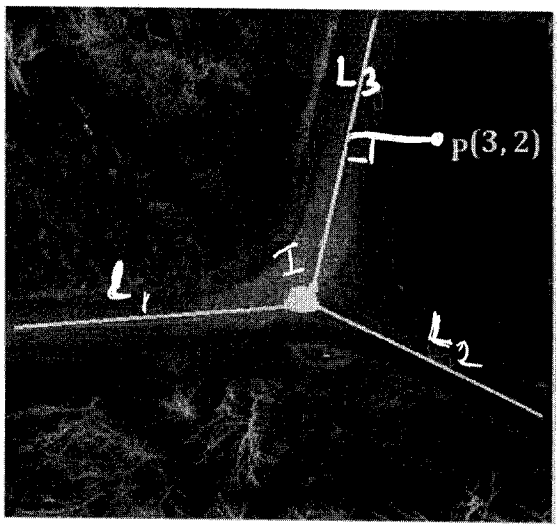
7. Find the distance between the parallel lines $2x - 3y + 7 = 0$ and $2x - 3y + 5 = 0$ 2

SECTION C

8. $P(2, 3)$ and $R(8, 1)$ are opposite vertices of a square $PQRS$. 3
a. Find the midpoint of diagonal PR.
b. Find the equation of diagonal QS.

9. Two lines passing through the point (1, 3) intersects each other at an angle of 45° and the equation of one of these lines is $y - 2x + 1 = 0$. Find the equations of the second line satisfying the above condition. Justify why there are two possible answers. 3
.

10. **CASE BASED QUESTION:**
Two straight roads with equations L_1: $x - y + 1 = 0$ and L_2: $2x - 3y + 5 = 0$ intersects at a point I. A man is standing at a point P(3 , 2) at a distance of $\frac{7}{5}$ *units* from a third road passing through the intersection of the above two roads.
On the basis of this information answer the following questions:
a) Find the point at which the two roads intersect.
b) Let the slope of line L_3 be **m**, where **m> 1**,then show that the equation of line L_3 is **mx – y + 3 – 2m = 0**.
c) Using the concept of distance of a line from a point, find the value of **m** for the above situation.



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ROLL NUMBER				

SET C

INDIAN SCHOOL MUSCAT
SECOND PERIODIC TEST

MATHEMATICS

CLASS: XI
11.01.2023

Sub. Code: 041

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- Section C contains 2 questions of 3 marks each.
- Section D contains 1 Case Based Question of 4 marks.
- All questions are compulsory.

SECTION A

1. The x and y intercepts of the line $x + 3y - 6 = 0$ are 1
   a) 3 and 2 respectively b) 2 and 6 respectively
   c) 6 and 2 respectively d) $\frac{1}{3}$ and $\frac{1}{2}$ respectively

2. The slope and the point where the line $4y - 3x + 6 = 0$ cuts y-axis are 1
   a) $\frac{2}{3}$ and $\frac{1}{4}$ respectively b) $\frac{3}{4}$ and $\frac{-3}{2}$ respectively
   c) $\frac{-1}{3}$ and $\frac{-1}{2}$ respectively d) $\frac{-3}{4}$ and $\frac{-3}{2}$ respectively

3. The line $2y + 3x - 1 = 0$ 1
   a) passes through the origin and has positive slope
   b) does not pass through the origin but has positive slope
   c) passes through the origin and has negative slope
   d) does not pass through the origin and has negative slope

ASSERTION-REASON BASED QUESTION

In question 4, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c)A is true but R is false.
(d) A is false but R is true.

4. **Assertion:** If two lines are parallel then the product of their slopes is -1.
   Reason: Parallel lines make same angle with the positive direction of x axis. 1

SECTION B

5. Using concept of slope show that the triangle with vertices (-2, 5), (1, 3) and (5, 9) is right angled. 2

6. The line connecting points $M(-1, k)$ and $N(3, -5)$ has equation $4y + 7x = d$. 2
a. Find the slope of the line in terms of k
b. Find the value of k.

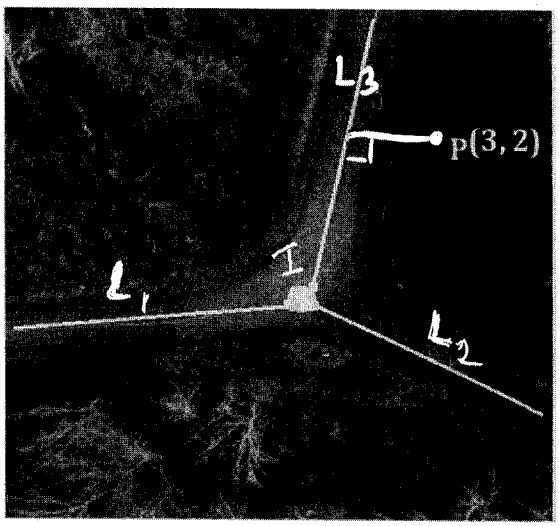
7. Find the distance between the parallel lines $6x - 8y + 7 = 0$ and $6x - 8y + 5 = 0$ 2

SECTION C

8. $A(8, 1)$ and $C(2, 3)$ are opposite vertices of a square $ABCD$. 3
a. Find the midpoint of diagonal AC.
b. Find the equation of diagonal BD

9. Two lines passing through the point (2, 1) intersects each other at an angle of 45° and the equation of one of these lines is $y - 2x + 3 = 0$. Find the equation of the second line satisfying the above condition. Justify why there could be two possible answers. 3
.

10. **CASE BASED QUESTION:**
Two straight roads with equations L_1: $x - y + 1 = 0$ and L_2: $2x - 3y + 5 = 0$ intersects at a point I. A man is standing at a point P(3 , 2) at a distance of $\frac{7}{5} units$ from a third road passing through the intersection of the above two roads.
On the basis of this information answer the following questions:
a) Find the point at which the two roads intersect.
b) Let the slope of line L_3 be **m**, where **m> 1**,then show that the equation of line L_3 is **mx – y + 3 – 2m = 0**.
c) Using the concept of distance of a line from a point, find the value of **m** for the above situation.



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