SVKM's NMIMS
SCHOOL OF AGRICULTURAL SCIENCES AND TECHNOLOGY

Programme: B.Sc. Agriculture   Year: I   Semester: I

Academic Year: 2019-20

Subject: Elementary Mathematics

Date: 17 December 2019

Marks: 50
Time: 11.00 am - 1.00 pm
Durations: 2 (Hrs)
No. of Pages: _02_

Final Examination

1. **Section A:**
   Define the Following   10 X 0.5 = [5]
   a. Condition of $\perp$ lines
   b. Condition of two II lines
   c. Slope of a line
   d. Convention of sign
   e. Slope intercept form
   f. Intercept form
   g. Collinear
   h. Circumference of circle
   i. Section formula
   j. General equation of circle

2. **Section B:**
   Explain briefly   10 X 1 = [10]
   a. Convert into the intercept form of $3x + 6y = 12$
   b. Convert into the slope intercept form $3x + 9y = 18$
   c. Find the unique solution of two lines $x + 3y = 4$ and $x - 5y = -4$
   d. If the centre is $(1,2)$ and radius is 3, find the equation of circle.
   e. Find the equation of II line, which is II to $2x + 3y + 2 = 0$ and passing through $(1,2)$
   f. Find the equation of $\perp$ line which is perpendicular to $2x + 3y + 6 = 0$ and passing through $(2,1)$
   g. Find the centre and radius of the circle, whose equation is $x^2 + y^2 - 2x + 6y + 3 = 0$
   h. Find the value of y from the equation $x - 3y + 4 = 0$, if $x = 2$
   i. Find the value of x from the equation $3x + 4y + 3 = 0$, if $y = -1$
   j. Find the intersection point of $3x + 2y = 5$ and $x - y = 0$

3. **Section C:**
   Mark True or False   5 X 0.5 = [2.5]

   a. Intercept form of $4x+16y=32$ is $\frac{x}{8} + \frac{y}{2} = 1$ True / False
   b. For equation of circle $x^2+y^2+2x+6y+4=0$, its center is $(-1,-3)$ and radius is $\sqrt{6}$ True / False
   c. Equation of $\perp$ line which is $\perp$ to $2x+3y+7=0$ and passing through $(1,2)$ is $3x-2y-4=0$ True / False
   d. Intersection point of $3x+2y=10$ and $x + y = 4$ is   True / False
   e. For line $3x+4y=12$, its slope intercept form is $-\frac{3}{4}x + 3$ True / False

4. **Section D:**
   Multiple choice questions: 5 X 0.5 = [2.5]
   a. Distance between two points $(2, -3)$; $(1,1)$ is
      i. $\sqrt{17}$ (ii) 17 (iii) $\sqrt{13}$ (iv) 13
   b. The eqn. of line which passes through $(2,3)$ and slope $m = 3$ is
      i. $3x - y - 3 = 0$ (ii) $x - 3y + 3 = 0$ (iii) $x - y + 5 = 0$ (iv) $x + 2y = 0$
   c. For $y = mx + c$, if $m = 3$, $x = 1/3$, $c = 0$ then
      i. $y = 1$ (ii) $y = 2$ (iii) $y = 3$ (iv) $y = -4$
   d. Equation of line passing through the point $(-3, 4)$ and $(1, -3)$ is
      i. $7x + 4y + 5 = 0$ (ii) $4x - 7y + 5 = 0$ (iii) $4x + 4y + 7 = 0$ (iv) $x - 3y + 2 = 0$
   e. If $\frac{x}{2} + \frac{y}{5} = 1$, then it can be written as
      i. $5x + 2y - 10 = 0$ (ii) $2x + 5y - 10 = 0$ (iii) $2x - 3y + 6 = 0$ (iv) None of these

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5. **Section E:**

Match the following:

a. For eqn. of circle $x^2 + y^2 + 4x + 8y + 2 = 0$, its center is

    j. $-\dfrac{3}{5}$

b. Intercept form of $4x + 8y = 24$ is

    ii. -2, -4

c. Find the equation $x^2 + y^2 = 4$, what is x when $y = 2$

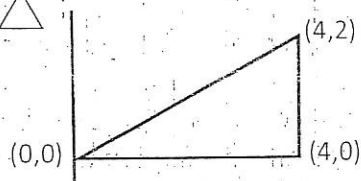   iii. $\dfrac{x}{6} + \dfrac{y}{3} = 1$

d. If $3x + 5y - 12 = 0$ then slope is

    iv. $x = 0$

e. Intersection of two lines $2x + 3y = 7$ and $x + y = 3$

    v. $4x + 2y - 6 = 0$

f. Area of △

    vi. 4

(4,2)
(0,0)
(4,0)

g. Find the equation of parallel line which is ll to $4x + 2y + 6 = 0$ and passes through (1,1)

    vii. (2,1)

h. For $3x + 4y + 2 = 0$ if $x = 2$ then y is

    viii. -1

i. The area of formed by the points (0,0), (2,2), (4,4) is

    ix. -2

j. For two perpendicular lines the product of their slope is

    x. 0

6. **Section F:**

Explain in details

(a) $5x + 3y = 16$ and $x - 5y = -8$, intersects at a point. Find their point of intersection.

(b) Find the area of △ ABC whose vertices are (1,4), (3,-2), (-3,16).

(c) Find the equation ll line which is parallel to $3x + 7y + 6 = 0$ and passing through (2,3) point.

(d) Find the equation of circle passing through the points (2,1), (2,-9) and (5,-8). Find the centre and radius also.

(e) Find the equation of ⊥ line which is ⊥ to $3x - 7y + 2 = 0$ and passing through (2,1).

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