Seat No: _____

PARUL UNIVERSITY COLLEGE OF AGRICULTURE

Enrolment No: _____

COLLEGE OF AGRICULTURE B.Sc.(Hons.)Agriculture Winter 2019 - 20 Examination		
•		Date: 05/12/2019 Time: 10.30 am To 1.00 pm Total Marks: 50
 Figures t Make su 	ns tions are compulsory. to the right indicate full marks. itable assumptions wherever necessary. v question on new page.	
	as Directed. in the blanks. (Each of 0.5 mark)	(05)
1.	The transpose of matrix $A = \begin{bmatrix} 7 & -8 \\ 2 & 4 \\ 0 & 5 \end{bmatrix}$ is	
2.	$\frac{d}{dx}(x^2+2) = \underline{\qquad}$	
3.	fixed distance is called the of the circ	
4.		e circle $x^2 + y^2 = a^2$, the value of c should be
5. 6.	$\overline{\int e^x dx} = \\ \text{If } A = \begin{bmatrix} 1 & 4 & -9 \\ 2 & 4 & 6 \\ 3 & 0 & 5 \end{bmatrix}, \text{ then } A \times A^T = __\$	
7.	The adjoint of matrix $\begin{bmatrix} -1 & 2 \\ -7 & 6 \end{bmatrix}$ is	
8.	The area under the curve $y = x^2$ between t	he lines $x = 0$ and $x = 1$.
9. 10.	If $x^2 + y^2 - 2x + 4y - 8 = 0$ is equation	
1.	Itiple choice type questions. (Each of 0.5 mar The pair of points $(A, B) \in R^1 \times R^1$ and the dis a) A=B b) A < B	
	The order of the matrix $\begin{bmatrix} 2 & 0 & 1 \\ 12 & -9 & 4 \end{bmatrix}$ is	
	a) 2 x 3 b) 2 x 2	c)3 x 2 d) 3 x 3
	For two matrices of same order A and B, $(AB)^T$ a) $A^T B^T$	
	b) $B^T A^T$	d) none of these
4.	$\int \sin x dx =$ a)cosx + c	c)sinx + c
	b) $-\cos x + c$	d)-sinx + c
5.	The line $y = 2$ is parallel to	
	a) y-axis b) x-axis	c)line x=2 d) none of these
6.	The slope of the line $y = 2x + 3$ is a) 3	c) 2
7.	b) 1 The centre of the circle $(x - 2)^2 + (y - 3)^2 =$ a) (3,2) b) (-2,-3)	d) 0 = 16 is c) (0,0) d) (2,3)
8.	Determinant of the matrix $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ is	
	a) 0 b) 2	c) 0.5 d) 1

9. If $y = e^{2x}$ then $\frac{dy}{dx} =$ _____ a) $2e^{2x}$ c) $2e^x$ d) e^x b) *e*^{2*x*} 10. For the circle $x^2 + y^2 + 2gx + 2fy + c = 0$, the radius $r = _____$ $a)\sqrt{g^2 + f^2 + c}$ b) $\sqrt{g^2 f^2 - c}$ c) $\sqrt{g^2 + f^2}$ d) $\sqrt{g^2 + f^2 - c}$ 11. The x-intercept of the line $\frac{x}{2} + \frac{y}{3} = 1$ is _____ c) 3 a) 2 b) 1 d) 4 12. $\frac{d}{dx}k =$ ____, k is real constant. a) k c) 0 b) 1 d) none of these 13. $\lim_{x \to 2} x^2 - 1 =$ ____ a) 1 c) 2 d) 3 b) 0 14. $\begin{bmatrix} 2 & 5 \\ 4 & 3 \end{bmatrix} + \begin{bmatrix} 1 & -2 \\ 8 & 1 \end{bmatrix} =$ a) $\begin{bmatrix} 1 & 3 \\ 4 & 2 \end{bmatrix}$ b) $\begin{bmatrix} 3 & 3 \\ 12 & 4 \end{bmatrix}$ 15. $\begin{vmatrix} 1 & 4 & -8 \\ 2 & 10 & 6 \end{vmatrix} =$ a) 0 $c)\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ d) none of these c) cannot be determined d) none of these 16. The y-intercept of the line y = 3x + 4 is _____ c) 3 a)1 d) 4 b) 2 17. Which of the following is false? $c)d(P,Q) = 0 \Leftrightarrow P = Q$ a) $d(P,Q) \ge 0$ b)d(P,Q) = d(Q,P)d) all are correct 18. $\int_{1}^{2} 2x \, dx =$ a) 1 c) 4 d) 3 b) 2 19. If A is a square matrix of order 3 x 3 and I is an identity matrix of same order then AI=____ a) A c) O b) I d) none of these 20. Equation of a straight line parallel to x-axis at a distance of 5 units above the x-axis is _____ a) x = 5 c) y = 5b) x = -5 d) y = -5Q.2 Do as Directed. A. Answer the following. (Any five out of seven) (05)1. Define circle. 2. Define zero matrix. 3. Define determinant. 4. Obtain the equation of the circle with centre (2, -3) and radius 3. 5. Find the equation of normal to the circle $x^2 + y^2 = 40$ at the point (6,2) 6. Write the equation of the line for which $\tan \theta = \frac{1}{2}$, where θ is the inclination of the line and yintercept is $-\frac{3}{2}$. 7. State true or false: "Two matrices can be added if they are of same orders." **B.** Answer the following. (Any five out of seven) (05)1. Find the values for c for which y = 2x + c is a tangent to the circle $x^2 + y^2 = 1$. 2. Find the new co-ordinates of the point when the origin is shifted to the point (1,3). 3. If $A = \begin{bmatrix} 9 & 4 & 5 \\ 8 & 10 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 5 & -2 \\ 18 & 6 & 7 \end{bmatrix}$, then find A - B. 4. Evaluate: $\frac{d}{dx}(2x^3 + x)$ 5. Find the equation of a straight line parallel to y-axis at a distance of 3 units on the left hand side

of y-axis.

6. Find the limit : $\lim_{x\to 3} x^3 - 6$

7. Find the area under the curve $2x + x^3$ between the lines x = 1 and x = 2.

Q.3 Solve the following. (Any five out of six)

1. Find the inverse of the matrix $A = \begin{bmatrix} 3 & 1 \\ 4 & 2 \end{bmatrix}$. 2. Differentiate the function $f(x) = x^4 + \cos x - e^{2x}$ with respect to x. 3. If $y = x^2 + 2$ and x = t, then find $\frac{dy}{dt}$. 4. Find the minima of the function $f(x) = x^2 - 2x$

- 5. Find the distance between the two points (1,6) and (4,2).

6.Determine the equation of straight line passing through the points (3, -4) and (2, 5).

Q.4 Solve the following. (Attempt any three out of four)

1. Solve the following system by substitution.

$$2x - 3y = -2$$
$$4x + y = 24$$

- 2. Find the equations of the bisectors of the angles between the straight lines 4x 3y + 4 = 0 and 6x+ 8y - 9 = 0.
- 3.Evaluate: (a) $\int x e^x dx$ and

(b)
$$\frac{dy}{dx}$$
 where $y = x^2 + cosx + e^{3x}$

4. Find the determinant of the matrix $A = \begin{bmatrix} 1 & 3 & 3 \\ -2 & 4 & 1 \\ 3 & 1 & 2 \end{bmatrix}$

(10)

(15)