Seat No: _____ **Enrollment No:** _____

PARUL UNIVERSITY

FACULTY OF PHARMACY

B.Pharm. Winter 2019-20 Examination

Semester: 1 **Date: 23/12/2019**

Subject Code: 08101105 **Time: 10:00am to 1:00pm**

Subject Name: Elementary Remedial Mathematics **Total Marks: 75**

Instructions:

1. Figures to the right indicate full marks.
2. Make suitable assumptions wherever necessary.

Q.1 Essay type Questions. (Any 2 out of 3) (10 marks each) **(20)**

1. If $3A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & -2 \\ -2 & 2 & -1 \end{bmatrix}$ then prove that $A^{-1} = A^T$
2. Find maximum and minimum values of $2x^3 - 3x^2 - 36x + 10$.
3. Simplify : $\int \frac{2x-3}{(x+5)(x-2)} dx$

Q.2 Short Essay type Questions. (Any 7 out of 9) (5 marks each) **(35)**

1. $If\ y = a\cos(kx) + b\sin(kx)\ then\ prove\ that\ \frac{d^2y}{dx^2} + k^2y = 0$
2. Evaluate: $\int \frac{3x^2+2x-5}{x} dx$
3. Find the equation of line passing through (1/2, 2) and (3/2 , 3).
4. Define Order and Degree of Differential Equation. And find Order and Degree of Differential equation :$d^3y/dx^3 - dy/dx - 9y = 10$
5. Solve : $(1+y)dx = (1+x)dy$
6. Find centre and radius of circle $4x^2 + 4y^2 - 8x + 16y - 2 = 0$
7. Solve using Cramer's Rule: x + 2y = - 3, 2x – 3y = 8
8. Solve : $\frac{dy}{dx} + 2y = 6e^x$
9. Evaluate : $\int x\ sinx\ dx$

Q.3 Answer in short. (2 marks each) **(20)**

1. Slope of line passing through (- 1, 3) and (5 , 2) = _____
2. If measurement of angle C = 90, BC = 4, AB = 6 then $cos\theta =$ ___, $sin\theta =$ _____
3. $tan^{-1}(1) + cos^{-1}\left(\frac{1}{2}\right) =$ ____
4. If A = $\begin{bmatrix} 2 & -6 \\ 8 & 7 \end{bmatrix}$ then adj(A) =____
5. $\frac{d}{dx}(x^x) =$ ___
6. Show that Points (2, 3),(0,2), (-2,1) are Co-linear.
7. $\frac{d}{dx}\left(3^x + x^3 - 3^9\right) =$ _____
8. $\int_0^1 x\,dx =$ _____
9. Solve : $x^2dx = y^2dy$
10. Slope of line -4x – 2y + 7 = 0 is _____