

**PARUL UNIVERSITY**  
**FACULTY OF PHARMACY**  
**Pharm.D April - 2019 Examination**

Year: 1

Subject Code: 08207131

Subject Name: Remedial Mathematics

Date: 26/04/2019

Time: 10:00 am to 01:00pm

Total Marks: 70

**Instructions**

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

**Q.1 Answer the following Questions. (any 2 out of 3) (15 Mark Each) (30)**

1. (a) Solve the following simultaneous equations using CRAMMER'S Rule (15)

$$x + y + z = 3$$

$$x + 2y + 3z = 6$$

$$x + 3y + 4z = 8$$

(b) Find the inverse of  $A = \begin{bmatrix} -1 & 1 & 2 \\ 3 & -1 & 1 \\ -1 & 3 & 4 \end{bmatrix}$

2. (a) If  $\cos A = \frac{15}{17}$ , then find  $\sin A$ ,  $\tan A$ ,  $\operatorname{Cosec} A$ ,  $\sec A$ ,  $\cot A$ . (15)

(b) Find the equation of the line passing through (-3,5) & perpendicular to the line through the points (2,5) & (-3,6)

3. (a) If  $y = \frac{1+\sin x}{1-\sin x}$  then find  $\frac{dy}{dx}$  (15)

(b) Evaluate  $\int_0^{\frac{\pi}{2}} \frac{\sqrt{\sin x}}{\sqrt{\sin x + \sqrt{\cos x}}} dx$

**Q.2 Short Essay Type Questions. (any 4 out of 5) (5 Mark Each) (20)**

1. Show that the points (1,1),(-2,7) & (3,-3) are collinear
2. If  $y = 3e^{2x} + 2e^{3x}$  then prove that  $\frac{d^2y}{dx^2} - 5\frac{dy}{dx} + 6y = 0$
3. Evaluate  $\int x \sin x dx$
4. Solve the following differential equation  $xdy+ydx=0$
5. Find  $L\{e^t \sin 2t\}$

**Q.3 Short Answers. (2 Mark Each) (20)**

1. Find order & degree of the given differential equation  $\frac{d^2y}{dx^2} + \frac{dy}{dx} = \sin x$
2. Find the value of  $\sin^2 45^\circ + \cos^2 45^\circ + \tan^2 30^\circ$
3. Find the distance between (2,-1) & (3,2)
4. If  $y = e^x + \log x + x^3 + 3$  then find  $\frac{dy}{dx}$
5. If  $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$  &  $B = \begin{bmatrix} 5 & 6 \\ 7 & 8 \end{bmatrix}$  then prove that  $(A + B)^T = A^T + B^T$
6. Find the centre & the radius of the circle  $x^2 + y^2 - 8x + 6y - 5 = 0$
7. Find the equation of the line passing through (2,3) & (5,-2)
8. Find  $\int (x^2 + \cos x + e^x) dx$
9. Find  $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2}$
10. Convert degree into radian  $135^\circ$