

VINAYAKA MISSION'S RESEARCH FOUNDATIONS, SALEM
(Deemed to be University)

Pharm.D DEGREE EXAMINATION August 2018
First Year

REMEDIAL MATHEMATICS

Time: Three hours

Maximum: 70 marks

I. Write essays on any **TWO** questions: (2 x15 = 30)

1. Prove that
$$\begin{vmatrix} \frac{1}{a^2} & bc & b+c \\ \frac{1}{b^2} & ca & c+a \\ \frac{1}{c^2} & bc & a+b \end{vmatrix} = 0$$

2. Evaluate
$$\int_1^3 \frac{dx}{(x+1)(x+3)}$$

3. State and prove sine formula for a triangle involving three sides and three angles

II. Write short answers on any **SIX** questions: (6 x 5 = 30)

4. Find the derivative of $\sin(e^{\sqrt{x}})$

5. If $y=x^y$ then show that $\frac{dy}{dx} = \frac{y^2}{x(1-\log y)}$

6. Solve : $x + 2y = \begin{pmatrix} 4 & 6 \\ -8 & 10 \end{pmatrix}$; $x - y = \begin{pmatrix} 1 & 0 \\ -2 & -2 \end{pmatrix}$

7. Solve: $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = e^{5x}$

8. Find the angle between the lines $3x-2y+9=0$ and $2x+y-9=0$

9. Find $L\{e^{3t} + 4t^3 - 2\sin t + 3\cos t\}$

10. Integrate : $\int \frac{x^2}{\sqrt{x+5}} dx$

11. Show that $\sqrt{\frac{1-\cos A}{1+\cos A}} = \operatorname{cosec} A - \cot A$

-- (2) --

III. Write short notes on any **FIVE** question:

(5 x 2 = 10)

12. Find the minor of -1 in the determinant $\begin{vmatrix} 3 & 4 & 1 \\ 0 & -1 & 2 \\ 5 & -2 & 6 \end{vmatrix}$

13. Find the value of $\sin(-780^\circ)$

14. Evaluate : $\lim_{x \rightarrow 2} \frac{x^4 - 16}{x^2 - 4}$

15. Evaluate : $\int \sqrt{\sin x} \cos x \, dx$

16. Define a row matrix and give example

17. Find the midpoint of the line joining the points (1,2) and (3,8)

(Sl.No: M19192)