Sl.No. M21609 **Course Code: 3200106**

VINAYAKA MISSION'S RESEARCH FOUNDATIONS, SALEM

(Deemed to be University)

Pharm.D DEGREE EXAMINATION - July 2019

First Year

REMEDIAL MATHEMATICS

Time: Three hours Maximum: 70 marks

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

1. Show that $\begin{vmatrix} 1 & a^2 & a^3 \\ 1 & b^2 & b^3 \\ 1 & c^2 & c^3 \end{vmatrix} = (a-b)\,(b-c)\,(c-a)\;(ab+bc+ca)$
2. Evaluate $\int_0^1 \frac{x^2}{1+x^2} dx$
3. Prove $a^2=b^2+c^2$ -2bc cosA for any triangle ABC

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

4. If $x^y = e^{x-y}$ then show that $\frac{dy}{dx} = \frac{\log x}{(1+\log x)^2}$
5. Differentiate $y= x^x$ with respect to x
6. Solve: $\sqrt{1+x^2}\,dx + \sqrt{1+y^2}\,dy = 0$
7. If $A = \begin{pmatrix} 3 & -1 & 2 \\ 1 & 2 & 2 \\ 2 & 0 & 5 \end{pmatrix}$ then find A^2
8. If $A = \begin{pmatrix} -1 & 2 \\ 2 & 4 \end{pmatrix}$ $B = \begin{pmatrix} 3 & 5 \\ 6 & -7 \end{pmatrix}$ then show that $(AB)' = B'A'$
9. Derive the standard equation of a parabola $y^2=4ax$.
10. A circle passes through (2, -3) and its centre is (4,4). Find its equation.
11. Find $L\{e^{2t}t^2\}$.

III. Write short notes on any **FIVE** question: (5 x 2 = 10)

12. Find the trace of the matrix $\begin{pmatrix} 1 & 3 & -5 \\ 2 & -1 & 5 \\ 2 & 0 & 1 \end{pmatrix}$
13. Find the equation of straight line passing through (1,0) having scope -1
14. Evaluate : $\lim_{x\to\infty} \frac{x^2+5x+2}{2x^2-5x+1}$
15. If $y= e^x(x^4)$ find dy/dx
16. If A=(2 3 4) B= $\begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$. Find the sum $A+B'$.
17. Find the midpoint of line joining (-3, -2) and (3, 2).

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