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

Pharm.D DEGREE EXAMINATION - September 2021
First Year

REMEDIAL MATHEMATICS

Time: Three hours   Maximum: 70 marks

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

1. Find the inverse of the matrix:

$$A = \begin{bmatrix} 1 & -1 & 2 \\ 0 & 2 & -1 \\ 2 & 1 & 1 \end{bmatrix}$$

2. If Sin A = 3/5 ,Cos B =12/13 to find i) Sin (A+B)   ii) Cos(A-B)
3. Find the equation of the circle passing through the points (0,2) , (2,-1) and (3,2).

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

4. Write down the properties of Determinants.
5. Find the distance between points
   i)   P(5,4) Q(9,7)
   ii) A(1,2) B(4,4)

6. Evaluate A+B, if defined for the given matrices A and B:

   i) $A = \begin{bmatrix} 1 & 4 & 3 \\ 6 & 8 & 9 \end{bmatrix}$, $B = \begin{bmatrix} 6 & 8 & 3 \\ 3 & -3 & 16 \end{bmatrix}$

   ii) Evaluate A-B $A = \begin{bmatrix} -1 & 0 & 5 \\ 2 & 3 & 0 \\ 4 & -9 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 3 & 1 \\ -4 & 0 & 5 \\ 1 & -1 & 0 \end{bmatrix}$

7. Which of the following matrices are singular

   i) $\begin{bmatrix} 4 & 3 \\ 6 & 9 \end{bmatrix}$ ii) $\begin{bmatrix} 14 & 17 \\ 4 & 2 \end{bmatrix}$ iii) $\begin{bmatrix} 1 & 4 & 3 \\ 6 & 8 & -5 \\ 2 & 8 & 6 \end{bmatrix}$

8. Find the solution for $\dfrac{dy}{dx} = \dfrac{9x^2 + 6x + 4}{2(y-1)}$.

9. Find $\int_{1}^{3} (4-x)^2 \, dx$.

10. If $f(x) = 2\log 4x$ then show that $f''(x) = \dfrac{-2}{x^2}$.

11. Show that the points (-2, 3) (1,2) and (7,0) are collinear.

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

12. What is Row matrix and column matrix? Give example.

13. If $A = \begin{bmatrix} 2 & -1 \\ 3 & 2 \end{bmatrix}$ then find A^2.

14. Find the distance between points P (3,2) Q(6,7).
15. What is degree and order?
16. Define Laplace Transform.
17. $\int 4x^7 dx$. Evaluate.

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