CLASS: B PHARMACY   SEMESTER: I
BRANCH: PHARM SCI TECH   SESSION: MO/19

SUBJECT: BP106RMT REMEDIAL MATHEMATICS

TIME: 1.30 Hour   FULL MARK: 35

A. Short Answers
(Answer five out of seven)   (05 × 05 = 25 marks)

1. Define Proper Fraction and resolve into partial fraction: $\frac{x}{(x+1)^2(x-3)}$.

2. If x and y are real number such that, $2\log(2y - 3x) = \log x + \log y$, find $\frac{y}{x}$.

3. Show that, $\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix} = -(a^3 + b^3 + c^3 - 3abc)$.

4. Find the maximum and minimum value of the function $x^3 - 3x^2 + 3x - 11 = 0$.

5. Evaluate the integrals: (a.) $\int \sqrt{ax + b}\, dx$ (b.) $\int_0^{\frac{\pi}{2}} \sin^3 x \, \cos x \, dx$

6. Define Order and Degree. Find the order and degree of the following differential equation.

    (a.) $\frac{d^2y}{dx^2} + 5\left(\frac{dy}{dx}\right)^2 + 2y = 0$ (b.) $\sqrt{1 + \left(\frac{dy}{dx}\right)^2} = 1 + x$.

7. Solve the homogeneous differential equation, $\frac{dy}{dx} = \frac{x+2y}{2x-y}$.

B. Long Answers
    (*Answer one out of two*)   (01 x 10 = 10 marks)

1. If $(x) = x + \frac{1}{x-2} + e^{-x}$, then find the value of following.   [2+2+3+3]
    (a.) $f(0), f(1)$
    (b.) $\lim\limits_{x \to 0} f(x)$
    (c.) $\frac{df}{dx}$ and $\frac{df}{dx}$ at x = 0.
    (d.) $\int f(x)dx$ and $\int_0^1 f(x)dx$.

2. Consider the system of equations, $x - 2y + 2z = 2; \ 2x - y - 2z = 1; \ 2x + 2y + z = 7$.
    (a.) Write the system of equation in the form of $AX = B$.
    (b.) Find the inverse of the matrix A.
    (c.) Find the Eigen value of A.   [3+4+4]

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