Total No. Of Sheets Used.. 01 4-13/2051 Total No. Of Questions ---09 808/ML

**Paper**:- XII A **Title of Paper**:- Mathematics for Medical Students

**Time allowed;**- 03 hours **Maximun Marks**:- 60 **Minimum Pass Marks**:- 21

**Note:-** The candidates are required to attempt **two** question each from Section **A** and **B** carrying **12** marks each and entire Section C consisting of **12** questions carrying **1** marks each.

## SECTION A

1) a) Prove that $\frac{Cos\ 9x - Cos\ 5x}{Sin\ 17x - Sin\ 3x} = -\frac{Sin\ 2x}{Cos\ 10x}$ (6)

b) If $A + B + C = 180°$, Prove that $Sin\ 2A + Sin\ 2B - Sin\ 2C = 4\ Cos\ A\ Cos\ B\ Sin\ C$. (6)

2) a) Find Circular measure of i) 75° ii) 40°20′ iii) 240° (6)

b) Find the value of $Cos\ 2A$ when $Sin\ A = \frac{4}{5}$. (6)

3) a)Evaluate $\lim_{x\to -2} \frac{x^2 + 5x + 6}{x + 2}$ (6)

b) Differentiate $y$ with respect to $x$ if $y = (2x + 1)^4\ (x + log\ 2x)$. (6)

4) a) Differentiate $\log(x\ e^x)$ w.r.t $x \log x$ (6)

b) Find $\frac{dy}{dx}$ if $x = at^3$ and $y = 3at$ (6)

## SECTION B

5) a) Evaluate $\int \left(x - \frac{1}{x}\right)^3 dx$ (6)

b) Evaluate $\int \frac{\text{Sin } 2x}{\text{Sin } 4x}$ (6)

6) a) Evaluate $\int Cos\ x\ Sin^7 x\ dx$ (6)

b)Evaluate $\int \frac{x^3}{9 + 12\ x^4} dx$ (6)

7) a) Solve system of linear equation by matrix method

$x - y + 2z = 7,\quad 3x + 4y - 5z = -5,\quad 2x - y + 3z = 12.$ (12)

8) By using properties of determinants, show that $\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^3 & b^3 & c^3 \end{vmatrix} = (a - b)(b - c)(c - a)(a + b + c)$ . (12)

## SECTION C

9) a) Find sin 75°

b) Convert 6 radians into degree measure

c) Draw the graph of $\sin x$

d) Find $\frac{dy}{dx}$ where $y = x + x^2 + \tan 2x$.

e) Solve $\lim_{x\to 0} \frac{Sin\ x}{x}$

f) Find $\frac{d}{dx}(\log(2x + 3))$

g) Evaluate $\int (x^2 + 1 - 3x)\ dx$.

h) Evaluate $\int Sin^2 x\ dx$ .

i) Define Square matrix.

j) Find $\begin{vmatrix} 1 & 2 & -5 \\ 0 & -3 & 3 \\ 0 & 0 & 7 \end{vmatrix}$

k) Define Singular matrix

l) Solve $\int e^{3x+2} dx$

(12 X 1=12)