Seat Number

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Smm-19

BP 106
RMT Remedial Mathematics
(711162)

P. Pages : 2

Time : One and Half Hours **Max. Marks : 35**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Simple non programable calculator is allowed.
5. Log table is allowed.

1. Attempt **any one** of the following. **10**

a) Find A^{-1}, where $A = \begin{bmatrix} 1 & -1 & 2 \\ 2 & 1 & -3 \\ 1 & 1 & 1 \end{bmatrix}$

Hence solve the system of equations $x+2y+z=4,\ -x+y+z=0,\ x-3y+z=2$

b) i) If $f(x) = \dfrac{\sin x}{1+\sin x}$, Find $f\left(\dfrac{\pi}{2}\right)$

ii) Without expanding, evaluating determinant

$$\begin{vmatrix} 41 & 1 & 5 \\ 79 & 7 & 9 \\ 29 & 5 & 3 \end{vmatrix}$$

iii) Find n^{th} derivative of the following $\cos^2 x$.

iv) Find the angel made by the line $x+\sqrt{3y}-6=0$ with the +ve direction of x-axis.

v) Solve the following equation $(x+y+1)\dfrac{dy}{dx}=1$.

2. Attempt **any five** of the following. **25**

i) Differentiate the following function with respect to x with first principle log sin x.

ii) Simplify $-\log\frac{16}{15}+5\log\frac{25}{24}+3\log\frac{81}{80}$

iii) Find a 2 x 2 matrix B such that $B\begin{bmatrix}1 & -2\\ 1 & 4\end{bmatrix}=\begin{bmatrix}6 & 0\\ 0 & 6\end{bmatrix}$

iv) Solve by Cramer's rule
$x-3y+5z=4,\ 2x-6y+10z=11,\ 3x-9y+15z=12$

v) Evaluate $\int\frac{\cos 2x}{\sin^2 x\cos^2 x}\,dx$

vi) Solve the following equations $(x^2-4xy-2y^2)\,dx+(y^2-4xy-2x^2)\,dy=0$

vii) Solve the system of homogeneous linear equations.
$2x+3y+4z=0,\ x+y+z=0,\ 2x-y+3=0$

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