

Seat Number

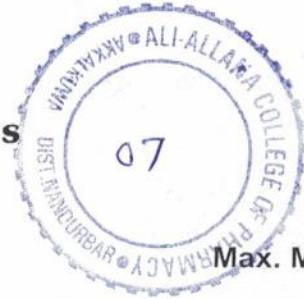
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कपिला - 007

W47

BP 106
RMT Remedial Mathematics
(711162)



P. Pages : 2

Time : One and Half Hour

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 programmable calculator is allowed.
5. Log table is allowed.

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

10

a) Verify Cayley Hamilton theorem for the following matrix.

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

b) i) If $f(x) = x^2 + 5x + 6$ find $f(0) + f(1)$.

ii) Find $\frac{dy}{dx}$ if $y = e^{2x} + x^n + 5 \log \sin x$

iii) $\int x e^x dx$

iv) If the line $2x + 3y + 5 = 0$ & $kx + 6y + 7 = 0$ are parallel to each other find the value of K.

v) $\lim_{x \rightarrow 0} \frac{3 \sin x + 4x}{7x - 2 \tan x}$

2. Attempt **any five** out of seven.

25

a) Resolve the partial fraction $\frac{1}{x^3 - 1}$

b) Prove that $7\log\left(\frac{16}{15}\right) + 5\log\left(\frac{25}{24}\right) + 3\log\left(\frac{81}{80}\right) = \log 2$

c) Find the inverse of matrix

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 4 & 5 \\ 2 & 7 & 11 \end{bmatrix}$$

d) Evaluate $\int \frac{x^2}{(x+1)(x+2)(x+3)} dx$

e) Solve D. E. $\frac{dy}{dx} = \frac{y+x}{x}$

f) Find the value of X if

$$\begin{vmatrix} 1 & x & x^2 \\ 1 & 2 & 4 \\ 1 & 3 & 9 \end{vmatrix} = \begin{vmatrix} 1 & 1 \\ 2 & 2 \end{vmatrix}$$

g) Find the Laplace transformation of $e^{-3t}(2\cos 5t - 3\sin 5t)$
