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4 SEM TDC MTH G 1 (B)

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(May)

MATHEMATICS

(General)

Course : 401

(Group—B)

(**Computer Laboratory**)

Full Marks : 30

Pass Marks : 12/9

Time : 1½ hours

*The figures in the margin indicate full marks
for the questions*

1. Answer any four of the following questions : 5×4=20

(a) Compute $z = \sqrt{56} + \log_{10} 8 + 2^7$.

(b) Compute

$$z = \sqrt{x^3 + y^3} \cos\left(\frac{\pi}{3}\right)$$

for $x = 2$ and $y = 5$.

(c) Solve the system of the equations

$$5x + 3y + 7z = 4$$

$$3x + 26y + 2z = 9$$

$$7x + 2y + 10z = 5$$

(d) Find the inverse of the matrix

$$\begin{bmatrix} 1 & -1 & 0 & 2 \\ 0 & 1 & 1 & -1 \\ 2 & 1 & 2 & 1 \\ 3 & 2 & 1 & 4 \end{bmatrix}$$

(e) If

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

compute $A^3 - 11A^2 + 15A$.

(f) Solve the algebraic equation

$$x^4 - 2x^2 + 1 = 0$$

(g) Plot the graph of $y = \sin x$ for $0 \leq x \leq 2\pi$.

(h) Plot the graph of $x = \sin t$, $y = \cos t$, $z = t$ for $0 \leq t \leq 10$.

2. Viva voce.

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3. Practical notebook.

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