Roll No. **Total No. of Pages : 02**

Total No. of Questions : 07

BCA (Sem.–4th) (2007 to 2010 Batch)

MATHEMATICS-II (COMPUTER ORIENTED)

Subject Code : BC-301

Paper ID : [B0227]

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains SIX questions carrying TEN marks each and students has to attempt any FOUR questions.**

SECTION-A

1.

(a) Define 'Skewness' and 'Kurtosis'.

(b) Define 'Simpson's $\frac{1}{3}$ rd rule.

(c) Find the derivative of $y = x^a + a^x + \log x^2$.

(d) Give formula to calculate Standard Deviation (SD) in continuous series.

(e) Integrate $\int (x-5)(x-4)\,dx$.

(f) Define 'Rank' of a matrix with an example.

(g) Define 'Maxima' and 'Minima'.

(h) Prove that AM ≥ GM.

(i) Find the derivative of $y = \sqrt{(x-a)(x-b)}$.

(j) Evaluate x, y, z and t if $\begin{bmatrix} x-2y & 3z-2t \\ x+2y & z+t \end{bmatrix} = \begin{bmatrix} -4 & 2 \\ 8 & 9 \end{bmatrix}$.

SECTION-B

2. Solve the following equations by Gauss-Jordon Method :

$$5x + 3y + z = 16$$

$$2x + y + 3z = 19$$

$$x + 2y + 4z = 25$$

3. If $x = y\ (1 + \log x)$ show that $\frac{dy}{dx} = \frac{\log x}{(1+\log x)^2}$.

4. Evaluate $\int e^x (1+x) \log (x\, e^x)\, dx$.

5. Show that of all the rectangles of given areas the square has the smallest perimeter.

6. Calculate the mean and standard-deviation for the following :

Size of item	6	7	8	9	10	11	12
Frequency	3	6	9	13	8	5	4

7. Evaluate $\int_0^4 e^x dx$ by Simpson's rule given that $e = 2.72$, $e^2 = 7.39$, $e^3 = 20.09$, $e^4 = 24.6$ and compare it with actual value.