(c) By using Lagrange's inverse interpolation formula compute x for y = 1.6865

x :	0.48	0.52	0.61	0.63
y :	1.616	1.682	1.840	1.878

4

9. (a) State the formula for trapezoidal rule of a integration. 4

(b) Evaluate $\int_0^1 \frac{dx}{1+x^2}$ by using Simpson's 1/3 rule. 8

OR

10. (a) Explain what do you mean by numerical integration ? 4

(b) Solve using trapezoidal rule the value of $\int_4^{5.2} \log x \, dx$, given

x :	4.0	4.2	4.4	4.6	4.8	5.0	5.2
Log_{10} x :	1.3863	1.4351	1.4816	1.5260	1.5686	1.6094	1.6486

8

AM – 229

Second Semester B. C. A. (Part–I) Examination

2 S T 4

NUMERICAL METHODS

P. Pages : 4

Time : Three Hours] [Max. Marks : 60

Note : (1) All questions carry equal marks.
(2) All questions are compulsory.

1. (a) Explain what do you mean by linear regression. 4

(b) Fit a straight line to the following data

X :	1	2	3	4	6.	8
Y :	2.4	3	3.6	4	5	6

4

(c) Obtain the normal equations for fitting a straight line ? 4

OR

2. (a) Explain the statistical role in least square theory. 4

(b) Fit second degree parabola to the following data by least square method

x.:	1.0	2.0	3.0	4.0
y :	6.0	11.0	18.0	27

4

(c) Explain what do you mean by multiple regression. 4

3. (a) Explain principle of least square. 4

(b) Fit the curve $Y = ax^b$ to the following data.

X :	1	2	3	4	5	6
Y :	1200	900	600	200	110	50

4

(c) Explain what is transcendental equation ? Explain the method to fit transcendental equation. 4

OR

4. (a) Explain what is non-linear regression ? 4

(b) Explain how will you reduce $y = ax^b$ to linear form. 4

(c) Given the following data.

x :	1	2	3	4	5
y :	0.5	2	4.5	8	12.5

Fit a power function model of the form $y = ax^b$ 4

5. (a) State Newton Gregory forward interpolation formula all In which case it is useful ? 6

(b) Find the population of India for the year 1926 with the help of following data.

Year	x :	1911	1921	1931	1941
Popi^n (Crore)	y :	30.3	30.5	33.8	38.9

6

OR

6. (a) What do you mean by interpolation and extrapolation ? Explain with example. 6

(b) Write the Newton Gregory formula for backward interpolation In which case is it useful. 6

7. (a) Explain inverse interpolation technique. 4

(b) Explain spline interpolation method. 4

(c) Compute the valve of x for y = 0.6742 form the Table given below;

x :	3.5	4.0	4.8	5.6
y :	0.5441	0.6020	0.6892	0.7482

by using Langrange's method. 4

OR

8. (a) Explain the procedure to solve cubic splines. 4

(b) What are assumptions of inverse interpolation ? 4