

7. (a) Write the advantages and disadvantages of Regula-falsi method.

(b) Find the value of the constant k such that

$$f(x) = \begin{cases} kx(x-1), & 0 < x < 1 \\ 0 & \text{elsewhere} \end{cases}$$

is a probability density function. Construct the

distribution function and compute $P(x > \frac{1}{2})$. 6+9

NEW

2017

BCA 3rd Semester Examination

COMPUTER ORIENTED NUMERICAL

PAPER—2103

Full Marks : 70

Time : 3 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer Q. No. 1 and any four from the rest.

1. Answer any five questions :

5×2

(a) What do you mean by Significance Error.

(b) Round off the following numbers correct upto five significant figures

3.679951, 39.27314.

- (c) What is interpolating polynomial ?
- (d) What is extrapolation ?
- (e) What is the condition of applying Simpson's $\frac{1}{3}$ rule ?
- (f) Write the frequency definition of probability.
- (g) What do you mean by independent events ?
- (h) What do you mean by distribution function of a random variable ?
2. (a) Establish the relation between forward and backward differences.
- (b) From the data in the following table find by Lagrange's formula the value of y when $x = 102$.

x	93.0	96.2	100.0	104.2	108.7
y	11.38	12.80	14.70	17.07	19.91

3. (a) Evaluate $f(1.2)$ and $f(3.8)$ using

x	0	1	2	3	4
f(x)	1	1.5	2.2	3.1	4.3

- (b) Write the advantage and disadvantage of Lagrangian Interpolation formula. 9+6
4. (a) Calculate by Simpson's one third rule the value of the integral $\int_0^1 \frac{x dx}{1+x}$ correct upto three significant figures, by taking six intervals. 9+6
- (b) Write the geometrical interpretation of trapezoidal formula. 9+6
5. (a) Establish the sufficient condition for the convergence of Newton Raphson method.
- (b) Find a real root of the equation $f(x) = x^3 + x^2 + x + 7 = 0$ by the method of bisection. 7+8
6. (a) Compute $y(0.02)$ by Euler Method for the problem $\frac{dy}{dx} = y, y(0) = 1$.
- (b) Two dice are thrown. Find the probability that the sum of the faces equal to 10. 9+6