

Roll No. ....

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BCA / D-18

**COMPUTER ORIENTED NUMERICAL  
METHODS**

**Paper-BCA-236**

*Time allowed : 3 hours]*

*[Maximum marks : 80*

*Note : Attempt five questions in all, selecting one question from each unit. Question no. 1 is compulsory.*

1. (a) What is percentage error ? 16
- (b) Write the order of convergence for bisection method.
- (c) What is formula for Regula Falsi method ?
- (d) What is simultaneous Linear Equations ?
- (e) Write the Taylor Series formula.
- (f) Define interpolation.
- (g) Write the Newton's formula for backward interpolation.
- (h) Define interpolation with unequal intervals.

**Unit-I**

2. (a) What do you mean by normalized floating point representation ? 8
- (b) Explain the pitfalls in computing using normalized floating point representation. 8
3. Explain the various types of errors that occur while performing numerical computations. 16

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Turn over

(2)

### Unit-II

4. Explain and find the order of convergence of the following methods: 16

- (a) Regula Falsi
- (b) Newton-Raphson
- (c) Iterative

5. Solve the following by Gauss Elimination method: 16

$$4x_1 + x_2 + 3x_3 = 11$$

$$3x_1 + 4x_2 + 2x_3 = 11$$

$$2x_1 + 3x_2 + x_3 = 7$$

6. Write short note on: 16

- (a) Chebyshev polynomials
- (b) Interpolation and approximation

7. Given: 16

$x$	4	5	7	10	11	13
$f(x)$	48	100	294	900	1210	2028

Find  $f(15)$  by Newton's divided difference formula.

### Unit-IV

8. Evaluate  $\int_0^2 \frac{dx}{1+x^4}$  by trapezoidal rule with  $h=0.5$ . 16

9. Evaluate  $\int_0^1 \frac{dx}{1+x^2}$  by (i) Simpson's 1/3 rule (ii) Simpson's 3/8 rule. 16