

S.No. 3236

P 16 PYE 2

(For candidates admitted from 2016–2017 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

Physics — Elective

NUMERICAL METHODS AND C++ PROGRAMMING

Time : Three hours

Maximum : 75 marks

PART A — ($10 \times 2 = 20$)

Answer ALL questions.

1. Draw flowcharts for while statements.
2. Define goto statements.
3. What are higher order polynomials?
4. What is exponential law fit?
5. Explain upper triangular form.
6. Write the final result of Jordan modification.
7. Define simpson's $1/3$ rule.
8. What is numerical integration?

9. Define local truncations error.
10. Give the final results of first order Euler methods.

PART B — ($5 \times 5 = 25$)

Answer ALL questions, choosing either (a) or (b).

11. (a) Briefly explain main function.

Or

- (b) Explain in detail about constants and variables.

12. (a) Define the method of least square.

Or

- (b) Explain Lagrange interpolation.

13. (a) Derive Jordan's modification.

Or

- (b) Explain order of convergence.

14. (a) Give the errors in the trapezoidal rule.

Or

- (b) Explain four point formulae for first order derivative.

15. (a) Explain the Geometric description of the formula.

Or

- (b) Draw the flowchart of fourth Range-Kutta method.

PART C — ($3 \times 10 = 30$)

Answer any THREE questions.

16. Explain first order divided differences.

17. Briefly explain Jordan's method.

18. Explain five point formulae for second order derivative.

19. Derive Eluar method for second order derivative.

20. Explain in detail about inverse of a matrix by Gauss.