

(204PHY17)

M.Sc. DEGREE EXAMINATION, APRIL 2018

SECOND SEMESTER

Branch — Physics

COMPUTATIONAL METHODS AND PROGRAMMING

(New Syllabus for batch 2017)

Time : 3 Hours

Max. Marks : 70

SECTION - A

(Short answer type)

Answer any FOUR of the following. All questions carry equal marks.

(Marks : $4 \times 5 = 20$ marks)

1. Write steps to make a simple power point presentation.
2. Write about "find" and "replace" options in MS-Word.
3. Write syntax rules in "C" programming.
4. Write about differences between IF and IF-ELSE statements.
5. Write the algorithm of gauss elimination method.
6. Write the basic principles for Bisection method.
7. Give the algorithm for evaluation of first order derivatives using Taylor's series expansion.
8. Write a short note on curve fitting.

SECTION - B

Answer ALL questions. All questions carry equal marks.

(Marks : $4 \times 12\frac{1}{2} = 50$ marks)

9. (a) What is Mail Merge in MS-Word? What are the steps involved in mail merge? What are the advantages of Mail merge?

Or

- (b) Write about the formulas and functions in MS-Excel. Represent the basic syntax for formula bar in MS-Excel.

[P.T.O.]

10. (a) What are arrays? Explain about one dimensional and two dimensional arrays. Write a program to calculate sum and average of an array.

Or

- (b) Write a "C" program that perform the addition and multiplication of two integer variables and print the results.
- (c) Discuss the application of BREAK and CONTINUE statements in C-Programming.
11. (a) Explain Newton-Raphsons method to solve quadratic equations and give an algorithm for the same.
- (b) Explain Gauss elimination method for solving simultaneous equation. Find the inverse of the following matrix by gauss elimination method.

$$\begin{matrix} 3 & 2 & 4 \\ 2 & 1 & 1 \\ 1 & 3 & 5 \end{matrix}$$

Or

- (c) Solve $2X_1 + X_2 + X_3 = 10$, $3X_1 + 2X_2 + 3X_3 = 18$ and $X_1 + 4X_2 + 9X_3 = 16$ by using Gauss-elimination method.
- (d) Explain about Regula-Falsi method and Gauss - Seidel iterative method.
12. (a) Using Taylor series method find the approximate value of y at $X = 0.2$ for differential equation $y' - 2y = 3e^x$, $y(0) = 0$.
- (b) Explain about Trapezoidal and Simpson's $\frac{1}{3}$ formula.

Or

- (c) Explain Newton's general interpolation formula. Find $\log_{10} 656$ with the data $\log_{10} 654 = 2.8156$, $\log_{10} 658 = 2.8182$, $\log_{10} 659 = 2.8189$, $\log_{10} 661 = 2.8202$ using the knowledge of interpolation.