M. Sc. PHYSICS
SECOND SEMESTER
COMPUTATIONAL PHYSICS
MSP - 202
(Use Separate Answer Scripts for Objective & Descriptive)

Duration : 1 hr 30 Minutes.   **Full Marks : 35**

(__PART-A : Objective__)

Time : 10 min.   **Marks : 10**

Choose the correct answer from the following: *1×10=10*

1. Shifting operator of E can be written as
    a. $f(x) = x + h$
    b. $E = I + \Delta$
    c. $E = I - \Delta$
    d. None of these

2. If Δ and ∇ be the first descending and ascending differential operator respectively of function f(x) , then $\Delta \nabla$ is
    a. Δ / ∇
    b. $\Delta + \nabla$
    c. $\Delta - \nabla$
    d. None of these

3. If $D = x \frac{d}{dx}$, then $e^D f(x)$ is
    a. $f(x + h)$
    b. $f(\frac{1}{x})$
    c. f(x)
    d. None of these

4. What is the degree of the interpolated polynomial (1,5), (2,18),(3,37), (4,62) and (5,93) ?
    a. 3
    b. 4
    c. 5
    d. 2

5. Which generation of computer uses ULSI technology?
    a. Second
    b. Third
    c. Fourth
    d. Fifth

6. Which of the following was the first commercial computer developed in the year 1951?
    a. ENIAC
    b. EDVAC
    c. EDSAC
    d. UNIVAC

7. The difference between an automatic variable and static automatic variable
    a. Only in visibility of the variable
    b. Only in lifetime of the variable
    c. Both in visibility & lifetime
    d. Not in visibility and lifetime

8. Array are passed as arguments to function by
    a. value
    b. reference
    c. both (a) & (b)
    d. none of the above

9. It is necessary to declare the type of function in the calling program if
   a. The function returns an integer
   b. The function returns a non integer value
   c. The function is not defined in the same file
   d. None of the above

10. The getch () library function
   a. Returns character when any key pressed
   b. Returns and display character on the screen when any key pressed
   c. Returns character when enter key pressed
   d. None of these

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(**PART-B : Descriptive**)

Time : 1 hr. 20 min.   Marks : 25

[Answer question no.1 & any three (3) from the rest]

1.   a.   Prove that $\Delta\left[\dfrac{f(x)}{g(x)}\right] = \dfrac{g(x).\Delta f(x) - f(x).\Delta g(x)}{g(x).Eg(x)}$ 5+5=10

     b.   Write a program to interchange to value of two variable without using third variable.

2. Solve using Gauss elimination method the following system of equations   5

   10x-7y+3z+5u=6
   -6x+8y-z-4u = 5
   3x+y-z+4z+11u=2
   5x-9y-2z+4u=7

3. Calculate the value of the integral $\int_{4}^{5.2} \log x \, dx$ by Trapezoidal rule.   5

4. Define flowchart? Draw the flowchart to find the biggest of 3 numbers.   5

5. What is String? Write 4 inbuilt string functions.   5

6. What are various data types available in C.   5

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