

**FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL/MAY 2005**

Optional Subject : Physics

Paper VIII—COMPUTER APPLICATION IN PHYSICS

(Common for Optical Instrumentation / Instrumentation and Electrical  
Equipment Maintenance)

Time : Three Hours

Maximum : 60 Marks

*Answer may be written either in English or in Malayalam.***Section A***Answer any nine questions.  
Each question carries 2 marks.*

1. Explain the input devices of a computer.
2. Distinguish between hardware and software.
3. What are the characteristics of Machine language ?
4. Explain what you mean by modular design.
5. What do you mean by psuedo code ?
6. Explain the general structure of a C Program.
7. Explain the Syntax of :
  - (a) For loop.
  - (b) While loop.
8. Following are certain illegal identifiers in C language. Explain the error.
  - (a) 3563.
  - (b) Salary and amount.
  - (c) Union.
9. What are escape sequences ? Give two examples.
10. Explain with example ++ and -- operators.
11. Explain what you mean by linear regression.
12. What do you mean by PACKET SWITCHING ?

(9 × 2 = 18 marks)

## Section B

Answer any three questions.  
Each question carries 6 marks.

13. Explain in detail the popular operating systems used in a PC.
14. Develop the algorithm and draw the flow chart for solving a quadratic equation.
15. Develop a C program to convert 0 to 100°C to Fahrenheit temperature and absolute temperature. Use step of 10°. Format of the output should display the result in a tabular form.
16. Explain trapezoidal rule for numerical integration and develop an algorithm for it.
17. Develop a computational procedure for the design of an LCR circuit.

(3 × 6 = 18 marks)

## Section C

Answer any eight questions.  
Each question carries 3 marks.

18. Draw the flow chart for receiving periods corresponding to ten lengths of a simple pendulum and determine  $g$ .
19. Write a C program using for loop to read ten integers and store it in an array.
20. Write a C program to find 10!
21. Develop an algorithm for generating FIBANACCI series.
22. Write a C program to plot  $x^2 - 3x + 2$  for  $x$  varying from 0 to 10.
23. A table of  $x$  and  $f(x)$  is given below. Find the value of  $f(x)$  at  $x = 3$  using Lagrange Polynomial :

$x$	1	2	4
$f(x)$	6	11	27

24. Fit a straight line for the table given below. Assume  $x$  to be independent variable :

$x$	1	2	3	4	5	6	7	8	9	10
$y$	3.5	5	6.5	8	9.5	11	12.5	14	15.5	17

25. Write a computer program to check whether a triangle with given sides is right angled.
26. Develop an algorithm for evaluating the sine of an angle up to fourth order.
27. Develop an algorithm to arrange five character strings in ascending order.
28. Solve the equation  $\frac{dx}{dy} + xy = 0$ ;  $y(0) = 2$  from  $x = 0$  to  $x = 0.3$  using Euler method. Take step size  $h = 0.05$ .
29. An internet page consist of 524 bytes of text characters and 1524 bytes of graphic images. How much time will it take to down load ten pages at the rate of 0.5 k B / S ?

(8 × 3 = 24 marks)