

E 6166



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Reg. No.....

Name.....

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, SEPTEMBER 2024

Sixth Semester

Core Course—COMPUTATIONAL PHYSICS

(Common for Model I and Model II B.Sc. Physics and B.Sc. Physics-EEM)

[Prior to 2013 Admissions]

Time : Three Hours

Maximum Weight : 25

Part A

Answer all questions.

Weight 1 for each bunch.

BUNCH I

1. The 8085 microprocessor has _____ number of flag registers..
2. The data bus is _____ (Unidirectional, Bi-directional)
3. In C++, _____ is an exit-controlled loop.
4. In C++, by default, members of the class are _____.

BUNCH II

5. _____ is place in between the CPU and the main memory.
6. The symbol that designates a comment in C++ is _____.
7. Second order R-K method is known as _____.
8. In 8085 microprocessor, _____ is used as a memory pointer for the stack memory.

BUNCH III

9. The instruction set of 8085 microprocessor is classified in _____ groups according to the word size.
10. State True or False : In C++, a structure may consist of structures inside it which is known as a nested structure.

Turn over





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11. State True or False: In C++, a function can be invoked either by call, by value or by call reference method.
12. `int a = 10/3 ;` in C++ will give answer _____.

BUNCH IV

13. In C++, `<<` is called _____.
14. The Bisection method for finding the roots of an equation $f(x) = 0$ is _____.
15. In Regula-falsi method, the first approximation is given by _____.
16. While evaluating a definite integral by Trapezoidal rule, the accuracy can be increased by taking _____.

(4 × 1 = 4)

Part B

Answer any five questions.

Weight 1 each.

17. What is an Assembler ?
18. What is T-state ?
19. Explain the function of the zero flag.
20. Differentiate between RAM and ROM.
21. What do you mean by classes in C++ ?
22. What is the use of “default” in “switch-case” statement ?
23. Write the Euler’s formula for numerical solutions for differential equations.
24. State the Trapezoidal rule.

(5 × 1 = 5)

Part C

Answer any four questions.

Weight 2 for each.

25. Explain the register organization of 8085 microprocessor.
26. Explain the syntax of different JUMP instructions.





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27. Write an 8085 program to add two 8 bit binary numbers. Assume the numbers are stored in memory and store the result in memory.
28. With syntax and example explain if- else-if and switch statements in C++.
29. Explain Newton-Raphson method.
30. Find a real root of the equation $x^3 + x^2 - 1 = 0$ using Bisection method.

(4 × 2 = 8)

Part D

Answer any two questions.

Weight 4 for each.

31. Discuss 8085 bus organization. Also explain address bus, data bus and control bus.
32. Write a C++ program to find the largest and smallest element of a set of n elements.
33. Using Simpson's 1/3rd rule evaluate $I = \int \left(\frac{1}{(1+x^2)} \right) dx$, in $[0, 1]$ correct to 3 decimal places . Take $h = 0.125$.

(2 × 4 = 8)

