

**B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, MARCH 2019****Sixth Semester****Core Course—COMPUTATIONAL PHYSICS**

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

[2013 Admission onwards]

Time : Three Hours

Maximum Marks : 60

**Part A**

*Answer all questions.*

*Each question carries 1 mark.*

1. What is an Assembler ?
2. What do you mean by an instruction cycle ? How does it differ from the machine cycle ?
3. Define opcode and operand.
4. Give the bit positions reserved for the flags in 8085.
5. Differentiate between static RAM and dynamic RAM.
6. What is an exit controlled loop ?
7. Write the formula for Newton-Raphson method.
8. Write the Euler's formula for numerical solutions for differential equations.

(8 × 1 = 8)

**Part B**

*Answer any six questions.*

*Each question carries 2 marks.*

9. Explain the advantages of an assembly language over high level language.
10. Write a note on externally initiated operations.
11. What are the three types of communication lines (buses) in 8085 bus organization ? Explain each.
12. Differentiate between Program counter and Stack Pointer.
13. What is structure in C++ ? Give the syntax.
14. What is a function in C++ ?
15. What are classes ? Describe the syntax for defining classes with examples.

**Turn over**

16. What is the major drawback of Taylor series method ?
17. State two point Gaussian quadrature formula to evaluate  $\int_{-1}^1 f(x) dx$ .
18. Write a note on computer oriented numerical methods.

(6 × 2 = 12)

**Part C***Answer any four questions.**Each question carries 4 marks.*

19. Write a program using the ADI instruction, to as the two hexadecimal numbers 3AH and 48H and to display the answer at an output port.
20. What is meant by 2 address format, 1 address format and 0 address format ? Explain.
21. Write a C++ program to check whether the given number is palindrome or not.
22. Write a C++ program to add two integers. Make a function add() to add integers and display sum in main() function.
23. Using Newton's Raphson Method find the real root of  $x \log_{10} x = 1.2$  correct to four decimal places.
24. Evaluate  $\int e^{-x^2} dx$  in  $[0, 0.8]$  by Trapezoidal rule with  $h = 0.1$  and  $h = 0.2$ .

(4 × 4 = 16)

**Part D***Answer any two questions.**Each question carries 12 marks.*

25. Draw the pin diagram of Intel 8085 microprocessor, and explain the functions of each pin.
26. Explain the various memory storage devices in computer.
27. Explain any four decision making loops in C++ using with proper syntax and proper program snippets.
28. Using Euler's modified method compute  $y(0.4)$  for the differential equation  $y' = x + y, y(0) = 0$  [Take  $h = 0.2$ ].

(2 × 12 = 24)