Reg. No…….. Name…… **19U605**

B. Sc. DEGREE END SEMESTER EXAMINATION - MARCH 2019

SEMESTER **– 6: PHYSICS (CORE COURSE)**

COURSE: **15U6CRPHY09: COMPUTATIONAL PHYSICS**

(Common for Regular - 2016 Admission / Supplementary-Improvement 2015 / 2014 Admissions)

Time: Three Hours Max. Marks: 60

PART A (Very short answer questions)

*Answer **all** questions. Each question carries **1** Mark*

1. The set of instruction written for the microprocessor to perform a task is called ……
2. What is the signal the 8085 asserts when it performs any operation?
3. Programming language that are intended to be machine independent are called……
4. The size of 8085 instruction set is ……..
5. By default members of the class are …….
6. Write a statement that takes element j of array double Array and writes it to cout with the insertion operator.
7. List two advantages of Object Oriented Languages.
8. First order RK method is known as ……
9. When do we need to use a numerical method instead of analytical method for integration?
10. Differentiate between absolute precision and relative precision. (1 x 10 = 10)

PART B (Short answer)

*Answer **any Seven** questions. Each question carries **2** Marks*

11. Distinguish between T state and Machine cycle?
12. Differentiate the function of the stack pointer and the program counter.
13. State the advantages of the assembly language.
14. List secondary memory devices.
15. Write a statement that displays the variable PHYSICS in a field 10 characters wide.
16. What is an increment operator? Distinguish between the prefix and postfix operation.
17. Solve the equation $\frac{dy}{dx}$=1-y, with initial condition x=0,y=0, using Euler's method and tabulate the solution at x=0.1 and 0.2.
18. Illustrate Bisection method mathematically and graphically.
19. Derive formula for numerical differentiation. (2 x 7 = 14)

PART C (Problem/Derivations)

*Answer **any Four** question. Each question carries **4** Marks*

20. Explain the Addressing modes of 8085 microprocessor with example.
21. Sketch the pin out of 8085 and signals.

22. Briefly explain with appropriate program using mnemonics for the addition of two hexadecimal numbers 32H and 48H in registers A and B
23. Differentiate between call by reference and call by value in C++.
24. Explain microprocessor initiated operations. Write a C++ program to find the roots of a quadratic equations.
25. Evaluate $\int_0^{0.6} e^x dx$ taking n=6, correct to five significant figures by Simpson's 1/3 rule.

(4 x 4 = 16)

PART D (Long answer questions)

*Answer **any Two** question. Each question carries **10** Marks*

26. Bring out the internal architecture of 8085.
27. What are the loop constructs in C++. Explain the features of each with sample programs.
28. Derive Newton's-Raphson's Formula for finding the solution of algebraic equations. Find the root of $sinx - 2x + 1 = 0$ using this method..
29. Derive Trapezoidal rule for numerical integration. Give the algorithm for integration of tabulated functions using this rule. (10 x 2 = 20)

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