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Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, April 2023

First Degree Programme under CBCSS

Physics

Core Course XII

PY 1644 : DIGITAL ELECTRONICS AND COMPUTER SCIENCE

(2014 –2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions. Each carries 1 mark.

1. What is meant by ALU?
2. What are C tokens?
3. Define Simpson's 1/3 rule.
4. State De Morgan's theorems
5. Give the significance of Lagrange interpolation.
6. What is called a flash memory?
7. What is meant by ASCII code?

8. What do you mean by linear regression'?

9. What is a flip flop?

10. Give the general form of IF..... ELSE statement.

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. Each carries **2** marks.

11. What is Boolean algebra? Point out the differences between Boolean algebra and algebra of real numbers.

12. Discuss cache and virtual memory.

13. Explain the basic structure of C Programme.

14. What is rate of convergence of an iterative method? Find the condition for convergence of Newton. Raphson method.

15. Explain NOR gate with its symbol and truth table. How can we implement NOR gate as NOT gate?

16. Describe the four basic data types in C.

17. What is the difference between modified Euler's formula and Runge Kutta method of order 2?

18. Distinguish between synchronous and asynchronous DRAM.

19. What do you mean by operator in C? Explain any two type different type of operator with example.

20. Explain 1's and 2's complement for a binary number system with examples.

21. Discuss the internal organization of memory chips.

22. State the differences between the declaration of a variable and the definition of a symbolic name

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. Each carries **4** marks.

23. Find a real root of the equation $-4x + \cos x + 2 = 0$ by Newton Raphson method up to four decimal places, assuming $X_0 = 0.5$

24. Explain half subtractor and full subtractor circuit.

25. Explain the significance of memory unit. Discuss the two different classes of memory storage.

26. Enumerate the basic functions of Operating System and explain each in brief.

27. Show that NAND gate is a universal gate.

28. Write a C program to interpolate the value of a function using Lagrange interpolation method.

29. Distinguish between static and dynamic memories.

30. Convert the following hexadecimal numbers to decimal

    (a) $(E9)_H$

    (b) $(7CA3)_H$

31. Write a C program to display a '*' series.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** carries **15** marks.

32. Describe S-R flip flop with suitable circuit diagram and truth table.

33. Write short notes on ROM, PROM, EPROM, and EEPROM.

34. Explain in detail the looping structures in C.

35. What is the difference between direct method and iterative method to find solution of a non-linear equation? Explain with suitable examples.

(2 × 15 = 30 Marks)