R – 1253

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

(2018 Admission Onwards)

Time : 3 Hours   Max. Marks : 80

SECTION – A

Answer **all** questions in **one** or **two** sentences. Each question carries **1** mark.

1.   What is meant by object in OOP?

2.   What is the importance of *if* statement?

3.   How do you access an array element?

4.   What is the basic difference between latches and flip-flops?

5.   Explain timing diagram and its importance.

6.   How does a DVD differ from a CD?

7.   What is a nibble?

8.   What is the function of backspace key?

9. What is a flowchart?

10. What is the sequence of processes done by the microprocessor until it comes across an instruction to stop?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions, not exceeding a paragraph. Each question carries **2** mark.

11. Give the truth table and timing diagram of a two input NOR gate.

12. What are the basic and the universal logic gates? Give their symbols.

13. Create NAND gate using NOR gates.

14. Convert the binary 110.11 to decimal and Hexadecimal.

15. Distinguish between dynamic and static RAM

16. What are classes?

17. What is meant by variables?

18. Explain the features of type *void*.

19. Give the syntax of arithmetic operators and explain them.

20. Give an example of *if... else* statement.

21. Differentiate between microprocessors and microcontrollers.

22. Perform the subtraction by 1's complement. 11011.00-10011.11.

(8 × 2 = 16 Marks)

SECTION – C

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

23. State and explain De Morgan's theorems.

24. Which are the relational operators in C++? Explain their meaning.

25. Implement clocked SR flip flop using NAND gates. Give its truth table.

26. Simplify $\overline{\overline{A\overline{B}} + ABC} + A\left(B + A\overline{B}\right)$.

27. Write a C++ programme to find the average of a set of N numbers.

28. Subtract the decimal number 125 from 200 using 2's complement binary operation. Express the numbers in hexadecimal.

29. What are constants? How are they declared in C++? Mention its types with example.

30. Explain software and hardware.

31. Draw the block diagram of a microprocessor based system with bus architecture and explain it.

<div align="right">(6 × 4 = 24 Marks)</div>

SECTION – D

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

32. Explain full adder. Give the complete logic circuit representation. How is it different from a half adder?

33. Discuss about various secondary memory storage systems.

34. Discuss about various fundamental data types in C++ with example.

35. Give an overview of the 8085 instruction set with example.

<div align="right">(2 × 15 = 30 Marks)</div>

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