



QP CODE: 21101587

Reg No : .....

Name : .....

**B.Sc DEGREE (CBCS ) SPECIAL SUPPLEMENTARY EXAMINATION, JULY 2021**

**Fifth Semester**

**CORE COURSE - PH5CRT07 - DIGITAL ELECTRONICS AND PROGRAMMING**

Common for B.Sc Physics Model I, B.Sc Physics Model II Applied Electronics, B.Sc Physics Model II Computer Applications & B.Sc Physics Model III Electronic Equipment Maintenance

2018 Admission Only

4B844B9E

Time: 3 Hours

Max. Marks : 60

**Part A**

*Answer any **ten** questions.*

*Each question carries **1** mark.*

1. Write the distributive laws of Boolean algebra.
2. Obtain the dual of the function  $(x + y + z)(\bar{x} + \bar{y} + z + 1) + 1 = 1$
3. Give an example of a Boolean function in Non standard form .
4. What is the logic circuit whose Boolean equation is  $\bar{A}BC + A\bar{B}C$ .
5. How many full adders are present in a 4 bit parallel adder?
6. Explain the principle of a decoder?
7. Why are asynchronous called ripple counters?
8. Why do you need an analog to digital converter?
9. Write part of a C++ code illustrating assignment operators.
10. What is the syntax for while statement?
11. Can the following data be stored in an array? 4, 56, 9.8, g, k. Comment.
12. Give an example of calling a function in C++?

(10×1=10)

**Part B**

*Answer any **six** questions.*

*Each question carries **5** marks.*





13. What is a coincidence checker circuit? Explain it with logic circuit, truth table and symbol.
14. Reduce the following Boolean expression  $\bar{X}\bar{Z} + XYZ + X\bar{Z} + X\bar{Y}$  to two literals. Draw logic diagram of the circuit that implement the original and simplified expression.
15. What is a Multiplexer? Explain
16. Draw the logic circuit and truth table for a clocked SR flip-flop. Explain its operation
17. Why do you need to convert digital to analog? Explain any one of the DAC.
18. What are the non-integer datatypes in C++?
19. Write a note on integer type variables.
20. What are constants? Mention its types with examples.
21. What is a class? How is it different from an object? Give an example.

(6×5=30)

### Part C

Answer any **two** questions.

Each question carries **10** marks.

22. Explain in detail Karnaugh Map method of simplification of Boolean expressions. Give an example each for 2-variable and 3-variable case
23. With the neat sketches of logic diagram and timing diagrams, explain the operation of JK flip-flop and MSJK flip-flop. How the MSJK flip-flop overcomes the racing around condition?
24. With the neat sketches, explain SISO and SIPO registers.
25. Write an essay on the structure of C++ programming language.

(2×10=20)

