



QP CODE: 22101787

Reg No :

Name :

**B.Sc DEGREE (CBCS) SPECIAL SUPPLEMENTARY EXAMINATIONS,
MAY 2022**

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

2019 Admission Only

D1F208DD

Time: 3 Hours

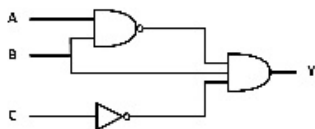
Max. Marks : 60

Part A

*Answer any **ten** questions.*

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

1. Symbolically represent three input AND gate.
2. Establish the identity $A(A+B)=A$ using the laws of Boolean algebra.
3. Give the number of maximum possible minterms and Maxterms for 4 variables.
4. Obtain the Boolean equation for the logic circuit given below.



5. How many and gates are required for a 1 to 8 Multiplexer?
6. Draw the truth table of a clocked SR flip-flop
7. What is the count range of the 3 bit ripple counter?
8. Why do you need a digital to analog converter?
9. Why C++ is called an extendable language?
10. How will you comment a part of a code in C++?
11. What are assignment operators in C++?





12. In C++, a function contained within a class is called

(10×1=10)

Part B

Answer any **six** questions.

Each question carries **5** marks.

13. (a) State second De-Morgan's theorem and implement the logic circuit.
(b) Find the complement of the function $F = (AB+CD)$, then show that $F\bar{F} = 0$
14. Obtain a simplified expression for the output Y in terms of inputs A, B, C for the following Boolean equation using K-Map,

$$Y = \bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}C + A\bar{B}\bar{C} + A\bar{B}C.$$

15. What is full subtractor? What is the use of subtractor?
16. Draw the logic circuit and truth table for a clocked D flip-flop. Explain its operation
17. Why do you need to convert analog to digital? Explain any one of the ADC.
18. What are literals? Mention its types with examples.
19. Write a C++ code segment to check whether the given number is larger than 56. Display the number only if it is less than 56.
20. Compute factorial of 10 using C++.
21. What are different types of functions in C++?

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **10** marks.

22. Simplify the expression $Y = \bar{A} \cdot \bar{B} \cdot \bar{C} + \bar{A} \cdot \bar{B} \cdot C + \bar{A} \cdot \bar{C}$ and implement it using only NOR gates.
23. How does decoder and encoder work? Explain with example
24. Define a register. Explain the different data movement methods. With the neat sketches explain SIPO register.
25. Write a C++ program to sort an array of n numbers in descending order.

(2×10=20)

