



QP CODE: 21100038

21100038

Reg No : .....

Name : .....

**BSc DEGREE (CBCS ) EXAMINATION, FEBRUARY 2021**

**Fifth Semester**

**Core Course - PH5CRT07 - DIGITAL ELECTRONICS AND PROGRAMMING**

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

2017 Admission Onwards

FD59F4F1

Time: 3 Hours

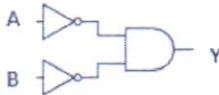
Max. Marks : 60

**Part A**

Answer any **ten** questions.

Each question carries **1** mark.

1. Give the truth table of NOR gate with three inputs.
2. Find the dual of the function  $(\bar{x}y\bar{z} + \bar{x}\bar{y}z = 1)$
3. Write the other canonical form of  $F(A, B, C, D) = \prod(3, 7, 8, 13, 15)$
4. Write the truth Table of the following logic circuit.



5. How does full subtractor work?
6. What is the use of a Multiplexer?
7. What is toggling in flip flop?
8. Why do you need a digital to analog converter?
9. What do you mean by type casting in C++?
10. Write part of a C++ code illustrating arithmetic operators.
11. Give an example for if statement.
12. What is meant by OOP?

(10×1=10)





### Part B

Answer any **six** questions.

Each question carries **5** marks.

13. By using laws of Boolean algebra, Prove that  $A(\bar{A} + C)((\bar{A}B + C)(\bar{A}BC + \bar{C}) = 0$
14. Make Karnaugh Map entries for variables F (A, B, C, D) =  $\sum (0,1,2,3,8,9,11,12,14,15)$  and obtain the simplest expression for F.
15. With neat sketches of logic diagram and timing diagrams, explain the operation of master-slave JK flip-flop.
16. With the neat sketches, explain SIPO registers.
17. Why do you need to convert analog to digital? Explain any one of the ADC.
18. Write a C++ code to display the output the text Computational Physics on a new line.
19. Describe int, short and char datatypes.
20. State difference between while and do.. while?
21. Give a C++ code segment to access the  $n^{\text{th}}$  element of an integer array.

(6×5=30)

### Part C

Answer any **two** questions.

Each question carries **10** marks.

22. Simplify the expression  $Y = \bar{A}. \bar{B}. \bar{C} + \bar{A}. \bar{B}. C + \bar{A}. \bar{C}$  and implement it using only NOR gates.
23. What is decoder and encoder? Explain with example.
24. What is a counter? Draw and explain the operation of Mod-8 ripple counter. What are the applications of counters?
25. (a) What are constants and how are they declared in C++? Mention its types with examples.  
(b) What is an escape sequence? Give examples and explain when they are used?

(2×10=20)

