QP CODE: 22100038

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Reg No : .....

Name : .....

B.Sc DEGREE (CBCS) REGULAR / REAPPEARANCE EXAMINATIONS, JANUARY 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)

2017 Admission Onwards

A3B02982

Time: 3 Hours Max. Marks : 60

Part A

*Answer any **ten** questions.*

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

1. What are the values of two inputs for which the output of NAND gate is low?
2. Draw the logic diagram for the Boolean equation $\overline{(x+y)}(\bar{x}+\bar{y})$
3. Write an example of a Boolean function in POS form.
4. Obtain the K-map for the Boolean function $F = \bar{A}\bar{B} + AB$.
5. What is full adder?
6. What is a clocked SR flip flop?
7. Justify the JK flip-flop as a universal flip-flop.
8. What is sampling in analog to digital conversion?
9. Give the typical bit width of an int type variable.
10. What is the use of const qualifier in C++?
11. What is an exit contolled loop?
12. Write down the syntax for declaring a function in C++.

(10×1=10)

Part B

*Answer any **six** questions.*

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

13. (a) State First De-Morgan's theorem and implement the logic circuit for the same
    (b) Find the complement of the function $Y = AB + CD$, then show that $Y + \bar{Y} = 1$
14. Prove the following identity with the help of a detailed truth table $\overline{\overline{xy} + \bar{y} + xy} = 1$.
15. Draw and explain the circuit diagram of 1 to 8 demultiplexer.
16. Draw and explain 3 to 8 decoder circuit diagram.
17. With neat sketches, explain 3-bit binary ripple counter.
18. What are different escape sequences in C++?
19. How will you find the largest among three given integers using C++?
20. How will you store the text "Ideas" in a variable?
21. What are objects ? How are they created?

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **10** marks.*

22. What is Boolean algebra? List laws of boolean algebra.
23. Define a register. Explain the different data movement methods. With the neat sketches explain SIPO register.
24. Explain the principle of D/A converters. Explain D/A converter using R-2R ladder network. What are the applications of DAC?
25. What are different built-in datatypes in C++? Illustrate their usage.

(2×10=20)