



QP CODE: 20100038

Reg No :

Name :

BSc DEGREE (CBCS) EXAMINATION, FEBRUARY 2020

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

C1A25B81

Time: 3 Hours

Maximum Marks :60

Part A

*Answer any **ten** questions.*

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

1. If you cascade an odd number of inverters, what kind of gate is the overall circuit equivalent to?
2. Draw the logic circuit of $(A+B).C = AB + AC$ for both LHS and RHS.
3. Write the other canonical form of $F(x, y, z) = \sum(1, 2, 5)$
4. Write the simplified Boolean expression $F(A, B, C, D)$ corresponding to the K-Map shown below.

		CD			
		00	01	11	10
AB	00	1	0	1	0
	01	1	0	1	0
	11	1	1	1	0
	10	1	0	1	0

5. What is the main difference between a latch and a flip flop?



6. Explain the operation of T flip flop
7. What is serial in serial out register?
8. What is quantization in analog to digital conversion?
9. Give an example of a preprocessor directive in C++.
10. List various logical operators in C++.
11. Write down the syntax for a function prototype in C++.
12. Explain the access specifiers used in C++ while defining a class?

(10×1=10)

Part B

*Answer any **six** questions.*

Each question carries 5 marks.

13. Simplify the Boolean equation $(A + B)(\overline{\overline{A}(\overline{B} + \overline{C})} + \overline{A}(B + C)) = A + B + C$ using De-Morgan's Theorem and Laws of Boolean algebra only.
14. Draw logic diagram to implement the Boolean expression $F = (A \oplus B) + (A \odot B)$. Also obtain the simplified function and its logic circuit.
15. What is a Demultiplexer? Explain
16. How does an encoder circuit work? Explain with example.
17. Why do you need to convert digital to analog? Explain any one of the DAC.
18. Describe float, long and double datatypes.
19. Give the syntax and any three examples for if... else statement.
20. Compute factorial of 10 using C++.
21. Give a C++ code segment to access the 5th element of the 2nd row of a two dimensional array.

(6×5=30)



Part C

Answer any **two** questions.

Each question carries **10** marks.

22. (a) Obtain the truth table and logic circuit for the Boolean function $F = \bar{x}\bar{y}z + \bar{x}yz + x\bar{y} + xz$. Simplify the function using Boolean identities and draw the logic circuit for the same.
- (b) A sensor has three inputs A, B, C. Get the Boolean Equation for the sensor out put.

**sensor
inputs**

A	B	C	Output
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

23. What is Half Adder and Full Adder Circuit? Explain
24. What is a counter? With neat sketches, explain 4-bit binary ripple counter. What are the applications of counters?
25. Write a C++ program to add two 3x3 matrices and display the resulting matrix.

(2×10=20)

