

B. Sc. DEGREE END SEMESTER EXAMINATION - OCTOBER 2024**SEMESTER 5 : PHYSICS****COURSE : 19U5CRPHY07 : DIGITAL ELECTRONICS AND PROGRAMMING***(For Regular 2022 Admission and Supplementary 2021/ 2020 / 2019 Admissions)*

Time : Three Hours

Max. Marks: 60

PART A**Answer any 8 (2 marks each)**

1. Obtain the complement of the function F, where $F(x,y,z) = x'y(z'+x')$
2. Provide the Graphical symbol, Algebraic function representation for Inverter gate.
3. Find the complement of the Boolean expression, $F(A,B,C) = A'(B+B'C)+AB$
4. What do you understand by the term, 'monotonicity' of a D/A converter?
5. What is meant by member function in C++ programming?
6. How can one define an integer variable in C++?
7. Give the range of value that type *char* hold in C++?
8. What is meant by a register?
9. What are the main problems that are found in procedural programming?
10. Give the syntax for using comments in C++ programming.

(2 x 8 = 16)**PART B****Answer any 6 (4 marks each)**

11. How can you construct an RS flip-flop using two NOR gates?
12. What is the role of *setw* manipulator in C++?
13. Discuss the working of a clocked JK flip-flop?
14. Write an Algorithm for temperature conversion (degree to kelvin conversion)?
15. Obtain the block diagram and truth table of a Half adder circuit?
16. Using K-Map simplify the Boolean Expression $F(x,y,z) = \Sigma (0,2,4,6)$
17. Is the statement true or False- Complement of a function can be obtained from taking dual of the function and complement each literal. Justify the statement for the Function, $F(x,y,z) = x(y'z'+yz)$
18. With the help of suitable diagrams, explain different types of shift registers?

(4 x 6 = 24)**PART C****Answer any 2 (10 marks each)**

19. Using K-Map, simplify the Boolean Function $F(w,x,y,z) = \Sigma(1,3,7,11,15)$ which has don't care condition $d(w,x,y,z) = \Sigma(0,2,5)$.
20. Differentiate between Overloaded functions., Inline functions, Recursion functions in C++.
21. Of the 3 loops discussed in C++ under what situation one type of loop will be preferred over the other?
22. Describe the working of a BCD to decimal decoder?

(10 x 2 = 20)