

**B. Sc. DEGREE END SEMESTER EXAMINATION - OCTOBER 2025****SEMESTER 5 : PHYSICS****COURSE : 19U5CRPHY07 : DIGITAL ELECTRONICS AND PROGRAMMING***(For Regular 2023 Admission and Supplementary 2022/ 2021/ 2020/ 2019 Admissions)*

Time : Three Hours

Max. Marks: 60

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

1. What do you understand by the term, 'truncated sequence' in the case of counter?
2. Express the Boolean function  $F=A+B'C$  as a sum of minterms.
3. How many min terms can be formed if we are taking 'n' variables into account.
4. What does *endl* manipulator does in C++?
5. Mention any 4 advantages of Object oriented programming over other Procedural languages.
6. What is an encoder?
7. Give the range of numbers that a 32 bit windows system *int* variable can hold.
8. What is meant by data encapsulation in OOP programming?
9. Discuss the 2 different ways you can implement comments in a C++ Programming.
10. Find the complement of the Boolean expression,  $F(A,B,C)= A'(B+B'C)+AB$

**(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. Discuss the working of a clocked JK flip-flop.
13. 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,  $F(x,y,z)= x(y'z'+yz)$
14. Explain the working of a decimal to BCD encoder?
15. Using K-Map simplify the Boolean Expression  $F(x,y)= \Sigma (2,3)$
16. What are meant by Control statements in C++?
17. Obtain the block diagram and truth table of a Half subtractor circuit?
18. What is the role of *setw* manipulator in C++?

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

19. Write down the syntax and operation of the decision *if* in C++?
20. Using K-Map, simplify the Boolean Function  $F(w,x,y,z)= \Sigma(1,3,7,11,15)$  which has don't care condition  $d(w,x,y,z)= \Sigma(0,2,5)$ .
21. Discuss the any 3 types of Decisions made in C++?
22. (a) Briefly describe the working of a ladder type D/A converter? Also explain different characteristics of a ladder type D/A converter?  
(b) Discuss the working of a counter type A/D converter?

**(10 x 2 = 20)**