

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)