

QP CODE: 25003397

B.Sc DEGREE (CBCS) SPECIAL REAPPEARANCE EXAMINATIONS, FEBRUARY 2025

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

2022 Admission Only

4B986E37

Time: 3 Hours

Max. Marks: 60

Part A

Answer any ten questions. Each question carries 1 mark.

- 1. Draw the logic circuit of a two input exclusive - OR gate using AND-OR-NOT gates.
- Simplify the Boolean expression to minimum number of literals $(x + y)(x + \bar{y})$ 2.
- Write an example of a Boolean function in POS form. 3.
- Verify the Boolean identity XY + XYZ = XY. 4.
- 5. What is the use of a Multiplexer?
- 6. What do you mean by decoder?
- 7. What are the applications of Flip-Flops?
- 8. Explain the operation of T flip flop
- 9. Can int datatype be used to store the number 50,000? Why?
- 10. What is the maximum length for a variable name in C++?
- 11. What are various types of operators in C++?
- 12. What is inheritance in C++?

 $(10 \times 1 = 10)$

Part B

Answer any six questions. Each question carries 5 marks.

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- 13. Reduce the following Boolean expression $\overline{X}\overline{Z} + XYZ + X\overline{Z} + X\overline{Y}$ to two literals. Draw logic diagram of the circuit that implement the original and simplified expression.
- 14. Draw the K-Map for the Boolean function $F = \bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}B\bar{C}\bar{D} + \bar{A}\bar{B}\bar{C}D + \bar{A}\bar{B}\bar{C}D + \bar{A}\bar{B}C\bar{D}.$ Obtain the simplified expression for F.
- 15. What is half subtractor? Explain
- 16. Why do you need to convert digital to analog? Explain any one of the DAC.
- 17. Why do you need to convert analog to digital? Explain any one of the ADC.
- 18. Write a C++ code to display the difference of two variables num1 and num2.
- 19. What are literals? Mention its types with examples.
- 20. How do you initialize a one dimensional array in C++? Give an example code snippet.
- 21. What are different types of functions in C++?

(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. With the neat sketches, explain SISO and SIPO registers.
- 24. With neat sketches, explain binary ripple counter. What are the applications of counters?
- 25. Write a C++ program to list even numbers between 0 and 100.

(2×10=20)