23129060

QP CODE: 23129060

Reg No : .....

Name : .....

B.Sc DEGREE (CBCS) REGULAR / REAPPEARANCE EXAMINATIONS, OCTOBER 2023

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

2017 Admission Onwards

DB999A0F

Time: 3 Hours Max. Marks : 60

Part A

*Answer any **ten** questions.*

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

1. What is Boolean algebra?
2. Simplify the Boolean expression to minimum number of literals $(x + y)(x + \bar{y})$
3. Write an example of a Boolean function in SOP form.
4. Obtain the K-map for the Boolean function $F = \bar{A}\bar{B} + AB$.
5. How many full adders are needed for 4 bit binary adder/subtractor?
6. What is the principle of Multiplexer?
7. Why JK flip flop is called master slave?
8. What is quantization in analog to digital conversion?
9. How do you store / handle a name in a C++ program?
10. What do you mean by type casting in C++?
11. How will you construct an infinite loop using C++ programming?
12. How will you store register numbers of 50 students in C++?

(10×1=10)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. What is a coincidence checker circuit? Explain it with logic circuit, truth table and symbol.

14. Reduce the following Boolean expression $\bar{X}\bar{Z} + XYZ + X\bar{Z} + X\bar{Y}$ to two literals. Draw logic diagram of the circuit that implement the original and simplified expression.

15. How does a encoder circuit work? Explain with example.

16. Explain the working of SR flip flop with truth table and circuit diagram.

17. Why do you need to convert digital to analog? Explain any one of the DAC.

18. Write a C++ code to display the output the text Computational Physics on a new line.

19. What are literals? Mention its types with examples.

20. Write short notes on logical operators in C++.

21. What are library functions? Give any three examples for library functions used in C++.

(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 Boolen 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. Define a register. Explain the different data movement methods. With the neat sketches explain SIPO register.

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 check whether the given number is postive, negative or zero.

(2×10=20)