QP CODE: 19103225

Reg No : .....

Name : .....

B.Sc.DEGREE (CBCS) EXAMINATION, NOVEMBER 2019

First Semester

Complementary Course - EL1CMT06 - ELECTRONICS - FUNDAMENTALS OF DIGITAL SYSTEMS

(Common to B.Sc Cyber Forensic Model III,B.Sc Computer Science Model III)

2017 Admission Onwards

E49E6697

Time: 3 Hours Maximum Marks :80

Part A

Answer any ten questions.

Each question carries 2 marks.

1. What weight does the digit 7 have in each of the following numbers? (a) 1370 (b) 6725 (c) 7051 (d) 58.72.
2. Mention the methods by which decimal fraction and decimal whole number can be converted to binary.
3. Perform the operation 4C5416-65AD16.
4. List the steps to be followed for binary to gray code conversion.
5. List the logic operations performd by an AND and OR gate.
6. Use NAND gates to implement the expression $X=A'+B$.
7. Cite example of SOP and POS expression and implement using logic gates.
8. Design a 1X4 DEMUX.
9. Design a 2-bit asynchronous counter.
10. What is the principle of a parallel in parallel out shift register?
11. Explain the function of SHIFT/LOAD input.
12. How a shift register counter differs from a basic shift register?

(10×2=20)

Part B

Answer any six questions.

Each question carries 5 marks.

13. Find the binary equivalent of the following hexadecimal numbers (a) 5719.0134 (b) 1486.0031 (c) 9832 (d) 239.134.

14. Describe the functional differences between a NAND gate and a negative OR gate. Do they both have the same truth table.

15. With suitable logic circuit and expression, show Exclusive-OR gate as a combinational logic gate.

16. (a) Construct an OR gate using NOR gate. (b) Construct an AND gate using NAND gate.

17. Draw the logic circuit and truth table for the expresion (A+B)C+AB.

18. Map the expression B'C'+AB'+ABC'+AB'CD'+A'B'C'D+AB'CD on a Karnaugh map.

19. Design a BCD to decimal decoder.

20. With relevant figure and wave form explain a synchronous 3-bit counter.

21. With neat diagram explain the working of a parallel in serial out shift register.

(6×5=30)

Part C

Answer any two questions

Each question carries 15 marks.

22. With suitable examples (a) explain the methods for implementing signed arithmetic (b) explain floating point numbers in signed binary arithmetic.

23. (a) Describe the laws of addition and multiplication in boolean algebrae. (b) State and explain De-morgans theorems.

24. With relevant diagrams explain the basic adders and subtractors.

25. With relevant figures and waveform explain SR, D and JK flip flops.

(2×15=30)