



21102625

QP CODE: 21102625

Reg No :

Name :

B.Sc DEGREE (CBCS) EXAMINATIONS, OCTOBER 2021

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

3D42094A

Time: 3 Hours

Max. Marks : 80

Part A

Answer any ten questions.

Each question carries 2 marks.

1. List the rules for subtracting larger number from a smaller number using 1's complement method.
2. Find the binary and octal equivalent of 2365110.
3. Add the following BCD numbers. (a) 1001+0100 (b) 00010110+00010101
4. Expand the term ASCII and EBCDIC codes.
5. Give an account of AND-OR-INVERT Logic.
6. Using appropriate dual symbols, implement the expression $X=(A'B'C'+(D+E)'$ with NOR logic.
7. List the steps for converting product terms to standard SOP.
8. Determine the logic required to decode the binary number 1011 by producing a high level on the output.
9. Compare latches and Flip Flops.
10. What are the applications of counter?
11. List the properties of synchronous counters.
12. What is full modulus cascading?

(10×2=20)





Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Perform hexadecimal subtraction (a) $8416-2A16$ (b) $C316-0B16$ (c) $DA316-01416$.
14. Compare the working of AND and OR gates.
15. Explain XOR and XNOR gates with relevant logic symbols and waveforms.
16. Implement each expression with NAND logic using appropriate dual symbols. (a) $ABC+DE$
(b) $ABC+D'+E'$
17. Write a note on boolean addition and multiplication.
18. Prove that (a) $(A+B)(A+C)=A+BC$. (b) $A+A'B=A$
19. Design an even parity generator/ checker for the data 10100.
20. With neat diagrams explain an edge triggered RS flip flop.
21. Design a 5 bit Johnsons counter.

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **15** marks.

22. (a) Give an account of numbering systems citing suitable examples.
(b) Find the binary, octal and hexadecimal equivalent of the following decimal numbers: (a) 10.75 (b) 543.075 (c) 2345.275
23. Explain with suitable example the techniques for converting (a) SOP expressions to truth table format (b) POS expressions to truth table format.
24. Develop a four input look ahead carry adder.
25. With neat diagram explain the working of (a) a four bit serial in parallel out shift register
(b) Parallel in serial out shift register.

(2×15=30)

