Institute of Science and Technology
Bachelor of Science in Computer Science & Information Technology
Model Question

Course Title: Digital System Design
Full Marks: 60
Course Code: CSC417
Time: 3 hours
Pass Marks: 24
Semester: VII

Group 'A'

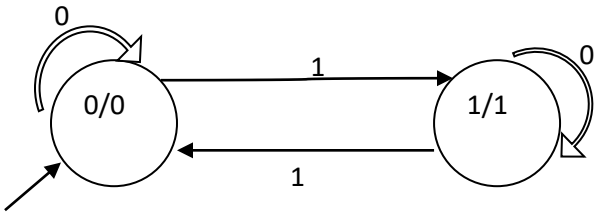
Attempt any TWO Questions. (2 × 10 = 20)

1. Define minimal sum and minimal product. Find minimal sum and minimal product for the function using K-map.
   F(abcd) = ∑(6,7,9,10,13) + ∑(1,4,5,11,15)
2. Find all the prime implications of a function using Quine Mc Clusky Method.
   F(abcd) = ∑(7,9,12,13,14,15) + d(4,11)
3. What are direct command flip flops? Explain briefly about its types.

Group 'B'

Attempt any EIGHT Questions. (8 × 5 = 40)

4. Differentiate between TTL and CMOS circuit families.
5. Explain Shannon's Expansion with an example.
6. Construct the maps of the following functions:
   F= A'B'D+A'BC+ABD+AB'C'D'+A'BC'D
7. What is an Edge Triggered Flip Flop? Explain with an example.
8. List out the differences between PAL and PLA.
9. Given an FSM. What is the output sequence for the given data sequence 001010110110110111. Explain the behavior of the FSM. Which flip flop can be used for it?



10. Explain the logical and relational operators used in VHDL.
11. What do you understand by SA0 and SA1? Explain.
12. Write short notes on any two
    a. IC Manufacturing
    b. Programmable gate array
    c. Fault detection