

5. Draw the circuit diagram of a 4-bit adder/subtractor and explain its working principle. 10
6. Write short notes on
 (i) PLD
 (ii) FPGA 5+5=10
7. Design a binary 3-bit up and down counter using JK flip-flops. 10
8. Discuss the components of a CPU in details. 10

2023/ODD/12/33/ECE-704/015

B. Tech Odd Semester Examination, February, 2023

Agricultural Engineering (7th Semester)

Course No.: ECE-704 (Open)
(Advanced Digital System Design)

Full Marks: 50

Pass Marks: 25

Time: 2 hours

- Note:**
1. Attempt any five questions.
 2. Begin each answer in a new page.
 3. Answer parts of a question at a place.
 4. Assume reasonable data wherever required.
 5. The figures in the right margin indicate full marks for the question.
 6. All the mathematical symbols and abbreviations have their usual meanings.
1. a) Design a logic circuit to implement the following expression using decoder. $Y = \sum m(0, 3, 4, 7)$
 b) Design the above expression using 4:1 multiplexer. 5+5=10
 2. a) What is a non-binary counter?
 b) Design a 3-bit non-binary counter. 2+8=10
 3. a) What are the different types of semiconductor memory?
 b) Design a SRAM circuit and explain the read and write operations. 2+8=10
 4. a) What is a positive edge triggered flip-flop?
 b) Draw a 4-bit serial-in-parallel-out shift register and explain its working principle. 2+8=10

Turn Over