Mahindra University Hyderabad
École Centrale School of Engineering
Minor-II Exam

Program: B. Tech. Branch: CM Year: II Semester: II
Subject: Computer Organization (MA2211)

Date: 17/04/2025 Start Time: 10:00 AM
Time Duration: 1.5 Hours Max. Marks: 20

Instructions:

1) Answer all the questions.

2) All questions are self-explanatory; no clarification will be provided during the exam.
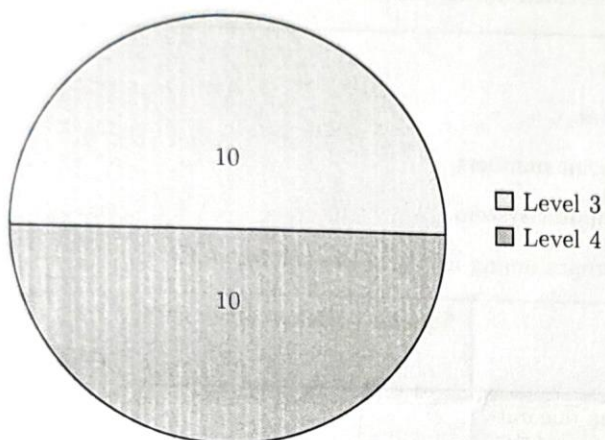
Course outcomes (COs)

CO 1: Design and implement basic logic circuits using logic gates.

CO 2: Perform arithmetic operations on integers and floating-point numbers.

CO 3: Understand the structure and usage of registers in a computer system.

CO 4: Apply knowledge of computer organization to enhance programming and problem-solving skills.

| Q.No.	Questions	Marks	CO	BL	PO	PI Code
1	Consider a logic circuit with three inputs A, B, C and one output Y. The inputs represent a 3-bit binary number ABC, where A is the most significant bit and C is the least significant bit. The output Y is 1 if the binary number ABC is divisible by 2; otherwise, $Y = 0$. (a) Construct the truth table for the circuit. (b) Draw the corresponding logic diagram.	5	CO1	L4	PO1	1.2.2
2	Design a logic circuit with four input variables A, B, C, D, representing a Binary-Coded Decimal (BCD) digit (i.e., valid inputs range from 0000 to 1001). The output function is defined as: $$F = \sum (2, 3, 5, 7)$$ (a) Use a Karnaugh map (K-map) to simplify the Boolean expression for F, utilizing the Don't Care conditions for the invalid BCD inputs (i.e., minterms 10 to 15). (b) Draw the logic diagram for the simplified Boolean expression.	5	CO1	L4	PO1	1.2.2

P.T.O.

Q.No.	Questions	Marks	CO	BL	PO	PI Code
3	Design a 2-to-4 line decoder with two input variables A_1 and A_0, and four output lines Y_0, Y_1, Y_2, Y_3. The decoder should activate exactly one output line corresponding to the binary value of the inputs. (a) Construct the complete truth table for the decoder. (b) Draw the logic diagram for the decoder using basic gates.	5	CO3	L3	PO1	1.2.2
4	Implement the function $F(A, B, C) = \sum(1, 3, 5, 6)$ using a 4×1 multiplexer, with C as the data input line and A, B as the selection lines.	5	CO3	L3	PO1	1.2.2

Bloom's Level wise Marks Distribution

Course Outcome wise Marks Distribution
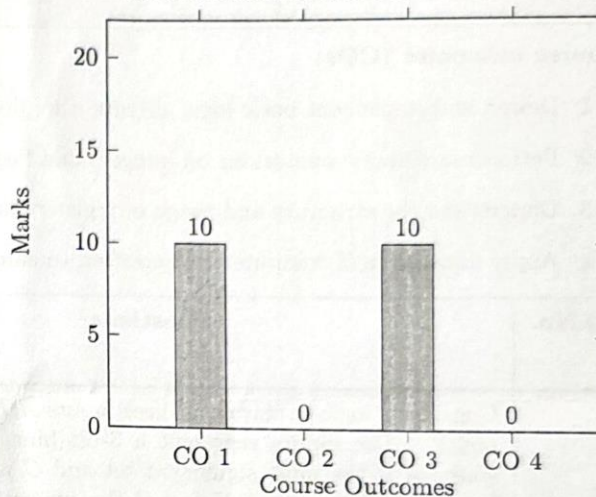
BL – Bloom's Taxonomy Levels:
   1 – Remembering, 2 – Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 – Creating
CO – Course Outcomes
PO – Program Outcomes
PI Code – Performance Indicator Code

End of exam