



# ADAMAS UNIVERSITY

## END SEMESTER EXAMINATION

(Academic Session: 2020 – 21)

<b>Name of the Program:</b>	BCA Hons. In In Banking, Financial Services and Insurance	<b>Semester:</b>	II
<b>Paper Title:</b>	Design of Logic Circuit	<b>Paper Code:</b>	CSE11405
<b>Maximum Marks:</b>	50	<b>Time Duration:</b>	3 Hrs
<b>Total No. of Questions:</b>	17	<b>Total No of Pages:</b>	2
(Any other information for the student may be mentioned here)	<ol style="list-style-type: none"> <li>At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name &amp; Code, Date of Exam.</li> <li>All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.</li> <li>Assumptions made if any, should be stated clearly at the beginning of your answer.</li> </ol>		

### Group A

#### Answer All the Questions (5 x 1 = 5)

1	Convert $(110110100011)_2$ to $( )_{16}$ .	<b>Ap</b>	<b>CO1</b>
2	What is the full form of CMOS?	<b>R</b>	<b>CO2</b>
3	Moore model uses only Entry Actions. True or False?	<b>U</b>	<b>CO3</b>
4	What is the full form of EEPROM?	<b>R</b>	<b>CO4</b>
5	ROMs are much faster than dedicated logic circuits. True or False?	<b>U</b>	<b>CO4</b>

### Group B

#### Answer All the Questions (5 x 2 = 10)

6 a)	Using the Karnaugh map, obtain the Boolean expression for $F(A, B, C, D) = \sum_m(0,4,7,9,13,15) + \sum_d(3,5)$	<b>Ap</b>	<b>CO1</b>
(OR)			
6 b)	Draw the logic diagram and derive the Boolean expression of a half-subtractor.	<b>U</b>	<b>CO1</b>
7 a)	Define Fan-in and Fan-out.	<b>R</b>	<b>CO2</b>
(OR)			
7 b)	What is the utility of CMOS?	<b>R</b>	<b>CO2</b>
8 a)	Define Mealy Machines.	<b>R</b>	<b>CO3</b>
(OR)			
8 b)	Describe the universal logic gates.	<b>R</b>	<b>CO3</b>
9 a)	Describe the different laws of Boolean algebra.	<b>R</b>	<b>CO1</b>
(OR)			
9 b)	Draw the logic circuit and truth table of a 2×4 decoder.	<b>Ap</b>	<b>CO1</b>
10 a)	Give the logic diagram and state transition table of a T F/F.	<b>U</b>	<b>CO4</b>
(OR)			
10 b)	Give the logic diagram and state transition table of an S-R F/F.	<b>U</b>	<b>CO4</b>

### Group C

#### Answer All the Questions (7 x 5 = 35)

11 a)	Using the Karnaugh map, minimise the following Boolean expression: $F(A, B, C, D) = \sum_m(1,2,3,8,9,10,11,14) + \sum_d(7,15)$ and draw the logic circuit for the minimized expression	<b>Ap</b>	<b>CO1</b>
(OR)			
11 b)	Draw the logic circuit diagram of a 2:1 MUX and by using it, design a	<b>Ap</b>	<b>CO1</b>

	4:1 MUX.		
12 a)	Briefly describe the family of logic gates	<b>R</b>	<b>CO2</b>
<b>(OR)</b>			
12 b)	Write short note on CMOS.	<b>R</b>	<b>CO2</b>
13 a)	Explain the functionality of Moore machine.	<b>U</b>	<b>CO3</b>
<b>(OR)</b>			
13 b)	Differentiate between Moore & Mealy machine.	<b>R</b>	<b>CO3</b>
14 a)	Write short note on ROM	<b>U</b>	<b>CO4</b>
<b>(OR)</b>			
14 b)	Explain how ROM is used as a PLD.	<b>Ap</b>	<b>CO4</b>
15 a)	Explain Full Adder with logic circuit diagram, truth table and Boolean expression	<b>U</b>	<b>CO1</b>
<b>(OR)</b>			
15 b)	Explain XOR and XNOR with logic diagrams and truth tables.	<b>U</b>	<b>CO1</b>
16 a)	Realize $f(A, B, C) = (a + bc)(b + c'a)$ using only NOR gates.	<b>Ap</b>	<b>CO1</b>
<b>(OR)</b>			
16 b)	Differentiate between K-map and Quine-McCluskey method	<b>R</b>	<b>CO1</b>
17 a)	Describe the different shift registers.	<b>U</b>	<b>CO4</b>
<b>(OR)</b>			
17 b)	Differentiate between S-R latch and S-R Flip-Flop	<b>U</b>	<b>CO4</b>

Note: The Sample prepared by assuming 5 COs in a course, considering one CO for one Module.

- i) If the COs are higher in numbers that can be managed by equating sub-divisional questions
- ii) If the COs are lower in numbers, the questions can be increased by equating the number of COs