



**K. K. Wagh Institute of Engineering Education & Research, Nashik**  
(An Autonomous Institute From A.Y. 2022-23)

	InSem Examination-I Winter 2023		
	Exam Seat No.:		
	Academic Year:2023-2024	Semester:III	
	Name of Programme:B.Tech Computer Engineering/AI and DS/Computer Science and Design	Pattern:2022	
	Name of Course:Digital Electronics and Logic Design	Course Code: COM222004	
	Max. Marks:30	Duration:1 Hr	

	<p><b>Instructions:</b> Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.</p> <ol style="list-style-type: none"><li>1. This question paper contains two page(s).</li><li>2. Answer to each new question is to be started on a new page.</li><li>3. Assume suitable data wherever required, but justify it.</li><li>4. Draw the neat labelled diagrams, wherever necessary.</li><li>5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question</li></ol>	
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**Question No. 1 Attempt following Question**

a)

Simplify the given logic function using Quine-McCluskey minimization technique

$$Y=f(A,B,C,D)=\sum m(1,3,5,7,11,13,14)$$

(6) CO1

**OR**

b)

Simplify the given logic function using Quine-McCluskey minimization technique

$$Y=f(A,B,C,D)=\sum m(2,3,4,5,7,11,13)$$

(6) CO1

- c) Simplify the given logic function using K Map minimization technique  
 $Y=f(A,B,C,D)=\sum m(1,2,3,4,5,7,9,13)+d(6,14,15)$  (5) CO1

**OR**

- d) Simplify the given logic function using K Map minimization technique  
 $Y=f(A,B,C,D)=\sum m(1,3,7,9,11,13)+d(4,6,14,15)$  (5) CO1

- e) Convert given expression into Canonical SOP form  
 $Y = f(A, B, C) = AB + A\bar{C} + BC$  (4) CO1

**OR**

- f) Convert given expression into Canonical POS form  
 $Y = f(A, B, C) = (A+B)(A+C)(B+\bar{C})$  (4) CO1

**Question No. 2 Attempt following Question**

- a) Design and realize full adder. (5) CO2

**OR**

- b) Design and realize full subtractor. (5) CO2  
 c) Design Binary to Gray code converter. (5) CO2

**OR**

- d) Design Gray to Binary code converter. (5) CO2  
 e) Draw and explain 1 digit BCD adder using IC 7483. (5) CO2

**OR**

- f) Verify the operation of 1 digit BCD adder to add  $(8)_{10}$  and  $(9)_{10}$ . (5) CO2