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

	InSem Examination-IWinter 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	

	Instructions: 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. 1. This question paper contains two page(s). 2. Answer to each new question is to be started on a new page. 3. Assume suitable data wherever required, but justify it. 4. Draw the neat labelled diagrams, wherever necessary. 5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question	

Question No. 1 Attempt following Question

a) Simplify the given logic function using Quine-McCluskey minimization technique

$Y=f(A,B,C,D)=\sum m(0,1,2,3,4,5,6)$ (6) CO1

OR

b) Simplify the given logic function using Quine-McCluskey minimization technique (6) CO1

$Y=f(A,B,C,D)=\sum m(0,1,2,4,8,9,10)$

c) Simplify the given logic function using K Map minimization technique

$Y=f(A,B,C,D)=\sum m(3,5,7,8,11,13)+d(6,9,12,15)$ (5) CO1

OR

d) Simplify the given logic function using K Map minimization technique

$Y=f(A,B,C,D)=\sum m(3,5,7,11,13,14)+d(6,9,12,15)$ (5) CO1

e) Convert given expression into Canonical SOP form

$Y= f(A, B, C) = \bar{A}B + B\bar{C} + AC$ (4) CO1

OR

f) Convert given expression into Canonical POS form

$Y= f(A, B, C) = (\bar{A}+B)(B+C)(\bar{A}+C)$ (4) CO1

Question No. 2 Attempt following Question

a) Design full adder using half adders and gate. (5) CO2

OR

b) Design half adder and half subtractor. (5) CO2

c) Design BCD to Excess 3 code converter. (5) CO2

OR

d) Design Excess 3 to BCD code converter. (5) CO2

e) Design 4 bit binary adder using full adders. (5) CO2

OR

f) Verify the operation of 4 bit binary adder to add $(12)_{10}$ and $(13)_{10}$. (5) CO2