



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

InSem Examination-I Winter2024	
Exam Seat No.:	
Academic Year:2024-2025	Semester:III
Class:SY	Program:B.Tech
Branch Code:ADS/COM/CSD	Pattern:2023
Name of Course:Digital Electronics and logic Design	Course Code:2301206
Max. Marks:30	Duration:1.15 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 1 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**

- 1 a) Simplify the given logic function using Quine-McCluskey minimization technique  $Y=f(A,B,C,D)=\sum m(0,2,6,10,12,13,14,15)$  (7) CO1

**Question No. 2 Attempt following Question**

- 2 a) Simplify the given logic function using K Map minimization technique  $Y=f(A,B,C,D)=\sum m(1,2,6,10,12,13,14,15)+d(0,3,7,8,11)$  (4) CO1
- 2 b) Find signed, one's complement and two's complement representation of -22. (4) CO1

**Group OR**

- 2 c) Convert given expression into Canonical SOP form (4) CO1

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

- 2 d) Simplify the given logic function using K Map minimization technique  $Y=f(A,B,C,D)=\sum m(2,7,8,13)+d(3,5,6,15)$  (4) CO1

**Question No. 3 Attempt following Question**

- 3 a) Design full subtractor. (4) CO2
- 3 b) Verify the operation of 1 digit BCD adder to add  $(7)_{10}$ ,  $(8)_{10}$  and  $C_{in}=1$ . (3) CO2

**Question No. 4 Attempt following Question**

- 4 a) Draw 4 bit binary universal adder/subtractor. (4) CO2
- 4 b) Design BCD to Excess 3 code converter. (4) CO2

**Group OR**

- 4 c) Draw 4 bit binary look ahead carry generator. (4) CO2
- 4 d) Design and realize Half Adder. (4) CO2

..... End of question paper.....