



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

SUMMER-2024	
Exam Seat No.:	
Academic Year:2023-2024	Semester:III
Class:SY	Program:B.Tech
Branch Code:ADS/COM/CSD	Pattern:2022
Name of Course:Digital Electronics and Logic Design	Course Code:COM222004
Max. Marks:60	Duration:2.30 Hrs.

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 2 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) Represent -27, 41 in 2's complement and signed magnitude form. (6) CO1

Question No. 2 Attempt following Question

- 2 a) Design and realize full adder. (6) CO2

Question No. 3 Attempt following Question

- 3 a) Implement given Boolean Expression using Demultiplexer: (6) CO3

$$f_1(A,B,C) = \sum m(1,2,3,4)$$

$$f_2(A,B,C) = \sum m(4,5,6,7)$$

OR

- 3 b) Implement given Boolean Expression using Multiplexer: (6) CO3

$$f(A,B,C,D) = \sum m(0,1,5,8,9,15)$$

- 3 c) Design and realize 3-bit Even Parity checker. (5) CO3

OR

- 3 d) Design and realize 3-bit Odd Parity generator. (5) CO3

- 3 e) Explain how PLA can be used as PLD. (5) CO3

OR

- 3 f) Explain how PAL can be used as PLD. (5) CO3

Question No. 4 Attempt following Question

- 4 a) Draw and explain 3-bit Johnson's Counter. (6) CO4

OR

- 4 b) Draw and explain 3-bit Bi-directional Shift Register. (6) CO4

- 4 c) Explain with diagram Master Slave J K Flip Flop. (5) CO4

OR

- 4 d) What is a forbidden condition in SR flip flop? How it is overcome? (5) CO4

- 4 e) Explain the use of Preset and Clear inputs provided in Flip Flop. (5) CO4

OR

- 4 f) What do you mean by edge triggered and level triggered flip flop? (5) CO4

Question No. 5 Attempt following Question

- 5 a) Design Sequence Detector (without overlap) to detect following sequence using JK Flip Flop: 1110 (8) CO5

OR

- 5 b) Design 2-bit Synchronous UP/DOWN counter with mode control M using JK Flip Flop. (8) CO5

- 5 c) Draw MOD-72 counter using IC 7490. (4) CO5

OR

- 5 d) Draw 2-bit Asynchronous UP/DOWN counter with mode control. (4) CO5

- 5 e) Explain the design procedure of Sequence Generator. (4) CO5

OR

- 5 f) Draw MOD-8 counter using IC-7490. (4) CO5

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