



**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:ETC	Pattern:2023
Name of Course:Digital System Design with HDL	Course Code:2302203
Max. Marks:30	Duration:1.15 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 1 page.
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.

**Marks CO**

**Question No. 1**

- 1 a) Implement the function  $F(A,B,C,D)=\sum m(2,4,5,7,10,14)$  implement using 8:1 multiplexer (7) CO1

**Question No. 2**

- 2 a) Design full subtractor using suitable demultiplexer (8) CO1

**OR**

- 2 b) Design a 2-bit magnitude comparator (8) CO1

**Question No. 3**

- 3 a) Explain with the help of neat diagram the operation of 4-bit universal shift register. (7) CO2

**Question No. 4**

- 4 a) Draw circuit diagram of a 4-bit ripple counter. Explain its working with timing diagram (8) CO2

**OR**

- 4 b) Design Mod7 asynchronous up counter (8) CO2

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