



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

WINTER-2025	
Exam Seat No.:	
Academic Year:2025-2026	Semester:VI
Class:TY	Program:B.Tech
Branch Code:ETC	Pattern:2022
Name of Course:FPGA Based System Design	Course Code:ETC223015(B)
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.

Marks CO

Question No. 1

- 1a) Differentiate between SRAM-based, flash-based, and antifuse FPGAs. (6) CO1

Question No. 2

- 2a) Describe different levels of design abstraction in VLSI design. (6) CO2

Question No. 3

- 3a) How is propagation delay calculated for combinational circuits? Provide an example. (8) CO3

OR

- 3b) Describe methods to minimize static power dissipation in FPGAs. (8) CO3

- 3c) How does floorplanning affect performance and resource utilization in FPGAs? (8) CO3

OR

- 3d) How do voltage scaling and clock gating contribute to power optimization? (8) CO3

Question No. 4

- 4a) Explain the difference between Mealy, Moore, and Medvedev sequential design styles. (8) CO4

OR

- 4b) How does clock skew affect sequential circuit performance and reliability? (8) CO4

- 4c) Explain the concept of behavioral modeling in sequential circuit design. (8) CO4

OR

- 4d) Discuss the role of design reuse and modularity in sequential machine design. (8) CO4

Question No. 5

- 5a) Describe the key components of a typical SoC (8) CO5

OR

5b) Discuss how IP reuse reduces design time and improves reliability. (8) CO5

5c) Explain the concept of System on Chip (SoC) and its importance in modern electronics. (8) CO5

OR

5d) Explain how system modeling helps in performance estimation and bottleneck identification (8) CO5

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