



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

WINTER-2024	
Exam Seat No.:	
Academic Year:2024-2025	Semester: I
Class: PG-I	Program: MTech (E &TC)
Branch Code: ETC	Pattern:2024
Name of Course: Embedded Product Design	Course Code:2402501
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 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.
5. The last column indicates the Course Outcome of the Question/sub-question.

**Marks CO**

**Question No. 1**

- 1a) What type of planning is required to develop product? (6) 1

**Question No. 2**

- 2a) Compare the Waterfall and Spiral models. (6) 2

**Question No. 3**

- 3a) List the three IC technologies. What are benefit of these over the others. (8) 3

**OR**

- 3b) Explain the software development process in embedded system (8) 3

- 3c) What are the key embedded system challenges? (8) 3

**OR**

- 3d) Explain selection criteria of using FPGA in embedded system (8) 3

**Question No. 4**

- 4a) Explain advantages and limitation of simulator-based debugging. (8) 4

**OR**

- 4b) Explain in circuit emulator (ICE)based debugging in detail. (8) 4

- 4c) Why software and hardware co-design is important (8) 4

**OR**

- 4d) Explain boundary scan-based hardware debugging in detail. (8) 4

**Question No. 5**

- 5a) Explain the different product enclosure development techniques in detail. (8) 5

**OR**

5b) Explain CAN protocol. What are the applications of CAN? (8) 5

5c) Explain importance of EMI/IRFI in embedded product. (8) 5

**OR**

5d) Explain I2C communication protocol and its application. (8) 5

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