



	WINTER-2023		
	Exam Seat No.:		
	Academic Year:2023-2024	Semester:I	
	Name of Programme: F.Y.M.Tech(E&TC)	Pattern:2022	
	Name of Course:Embedded Product Design	Course Code:ETC225101	
	Max. Marks:60	Duration:2.50	

	<p>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.</p> <ol style="list-style-type: none">1. This question paper contains 02page(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.	
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Question No. 1 Attempt following Question

- 1a) What is time to market design matrix? Explain market window and why is it so important for products to reach the market early in this window (6) 1

Question No. 2 Attempt following Question

- 2a) Explain need of hardware and software for embedded products. Explain partitioning of the design into its software and hardware components (6) 2

Question No. 3 Attempt following Question

- 3a) Explain the concept of hardware and software modules in computer systems. How do these modules interact and contribute to system functionality? (8) 3

OR

- 3b) Explain three significant trade-offs encountered in computer system design and their impact on system functionality, performance, and cost. (8) 3

- 3c) Compare Custom Single-purpose Processors vs. General-Purpose Processors (8) 3

OR

- 3d) Provide examples of common interfaces used in modern computer systems and discuss their respective functionalities (8) 3

Question No. 4 Attempt following Question

- 4a) Explain the significance of incorporating specific technologies such as real-time operating systems (RTOS), sensors, and microcontrollers in the development of embedded products. (8) 4

OR

- 4b) Discuss the importance of verification techniques in ensuring the functionality and reliability of embedded systems. (8) 4

- 4c) Define the criteria used for selecting testing tools in the context of embedded system development. How does scalability and compatibility affect the tool selection (8) 4

OR

- 4d) Discuss the challenges associated with hardware-software co-design in embedded systems and strategies to mitigate these challenges. (8) 4

Question No. 5 Attempt following Question

- 5a) Explain the importance of EMI/RFI certification documentation in embedded product development. (8) 5

OR

- 5b) Discuss the challenges associated with documenting communication protocols in embedded systems and strategies to address these challenges. (8) 5

- 5c) Explain the significance of mechanical packaging documentation in embedded product development. How does it contribute to product reliability and durability? (8) 5

OR

- 5d) Select and analyze two real-life embedded products in detail with documentations associated with it. (8) 5