Name: **Enrolment No:**	

UPES

End Semester Examination, May 2024

Course: Automotive Embedded System **Semester: II**

Program: M.Tech (eMobility) **Time : 03 hrs.**

Course Code: MEEM7010 **Max. Marks: 100**

Instructions: Answer all the sections

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q1	Interpret the quality attributes of an embedded system	**4**	**CO1**
Q2	Discuss the tradeoffs required to partition system requirement into hardware and software	**4**	**CO1**
Q3	Explain the role of VLSI in the designing process of embedded hardware	**4**	**CO2**
Q4	Consider the application that are not critical and whose response time is not important. Elucidate the embedded firmware design approach for such applications.	**4**	**CO3**
Q5	Demonstrate the method for testing interconnects in PCBs used for embedded hardware	**4**	**CO4**
	SECTION B **(4Qx10M= 40 Marks)**		
Q6	Investigate the concurrent processing program model for the seat belt warning/alarm system. OR Investigate the following core components of a typical embedded system - Communication interface, embedded firmware and other systems components	**10**	**CO1**
Q7	Analyze the components of the design process required for printed circuit boards	**10**	**CO2**
Q8	Examine the ARM Cortex M3 microcontroller for the following processes: (a) programming utilized for handling exceptions (b) Advanced features of programming	**10**	**CO3**
Q9	Illustrate the disassemblers, simulator, emulators and debussing processes used in operating systems with ability to manage resources, execute programs, and process data for real-time applications	**10**	**CO4**

SECTION-C (2Qx20M=40 Marks)			
Q10	Explore the interfacing of stepper motor having four step operation with ARM Cortex M3 LPC1768 microcontroller. Utilize embedded C programming.	**20**	**CO3**
Q11	Design an embedded system for night vision system in vehicles to provide better visibility at night for the driver. OR Design an embedded system for adaptive cruise control of the vehicles to ensure safety in transportation.	**20**	**CO4**