



M.E/M.TECH DEGREE EXAMINATIONS: NOV/DEC 2023

(Regulation 2018)

First Semester

EMBEDDED SYSTEMS TECHNOLOGIES

P18EST1002: Design of Embedded Systems

COURSE OUTCOMES

- CO1:** An ability to design a system, component, or process to meet desired needs within realistic constraints such as safety, manufacturability, and sustainability.
- CO2:** Describe the differences between the general computing system and the embedded system, also recognize the classification of embedded systems.
- CO3:** Design real time embedded systems using the concepts of RTOS.
- CO4:** Foster ability to understand the role of embedded systems in industry.
- CO5:** Describe the differences between the general computing system and the embedded system, also recognize the classification of embedded systems.

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. **Assertion (A):** interrupts are use to stop the program CO2 [K₁]
Reason (R): interrupts are use to stop and run the program based on priority
 a) A and R are true but not related b) A and R are true and related
 c) A is true and R is false d) R is true and A is false
2. PIC controllers have ____ unique feature compared to 8051 controller CO1 [K₁]
 a) Inbuilt memory b) Inbuilt CPU
 c) Inbuilt ALU d) Inbuilt Decoder
3. Identify suitable compiler for 8051 microcontroller CO2 [K₁]
 a) MP Lab b) keil
 c) Rider d) Android
4. Matching type item with multiple choice code CO2 [K₂]

List I	List II
A. mobile phone	i. GPRS
B. Google map	ii. USB Drive
C. Printer	iii. CAN bus
D. car	iv. GSM

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|---|-----|-------------------|
| 16. Define pipes in RTOS | CO3 | [K ₂] |
| 17. Differentiate assembler and debugger. | CO4 | [K ₁] |
| 18. Define Hardware Partitioning. | CO4 | [K ₁] |
| 19. Justify the need for EDLC. | CO5 | [K ₁] |
| 20. List any four sensors in intelligent street light system. | CO5 | [K ₂] |

PART C (6 x 5 = 30 Marks)

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|---|-----|-------------------|
| 21. Write short note on a) DMA b) RTC | CO1 | [K ₂] |
| 22. Explain the architecture of I/O devices and Bus in embedded system, in brief. | CO2 | [K ₂] |
| 23. Explain the concepts of multitasking and multi environment in RTOS, in brief. | CO3 | [K ₂] |
| 24. Explain software development environment IDE process | CO4 | [K ₂] |
| 25. Explain the case study of PHEV with neat diagrams. | CO5 | [K ₃] |
| 26. Explain the case study of intelligent street light system with neat diagrams. | CO5 | [K ₃] |

Answer any FOUR Questions

PART D (4 x 10 = 40 Marks)

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|---|-----|-------------------|
| 27. Explain the structure of embedded system with neat block diagram. | CO1 | [K ₂] |
| 28. Explain serial and parallel communication protocol with neat diagram. | CO2 | [K ₂] |
| 29. Explain the basic concepts and features of RTOS. | CO3 | [K ₂] |
| 30. Explain the software and hardware partitioning in embedded system with neat diagrams. | CO4 | [K ₂] |
| 31. Explain the step by step procedure for Embedded Product Development Life Cycle (EDLC) | CO5 | [K ₂] |
