



MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : PE-EC703A Embedded System

CS/B.TECH(N)/ODD/SEM-7/7597/2022-2023/1019

Time Allotted : 3 Hours

Full Marks :70

The Figures in the margin indicate full marks.

Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer any ten of the following :

[1 x 10 = 10]

- (i) How an embedded system communicate with the outside world ?
- (ii) Mention the processor which possesses a CISC architecture
- (iii) Which is a RISC architecture
- (iv) An embedded system is a combination of
- (v) Which type of memory is suitable for low volume production of embedded systems ?
- (vi) Name the activity which concerned with identifying the task at the final embedded systems is
- (vii) What does I2C stand for?
- (viii) Name the input clock for the receiver part of the UART 8250 ?
- (ix) The pin 9 in 8051 Microcontroller IC specifies
- (x) Give an example of direct type addressing mode in Embedded System ?
- (xi) How many Operating modes does ARM have ?
- (xii) How many Classes the ARM Instruction set architecture is divided into

Group-B (Short Answer Type Question)

Answer any three of the following

[5 x 3 = 15]

- 2. What is Task scheduler? How does the scheduler know when a task has become blocked or unblocked? Define task and Task state. [5]
- 3. What is I2C communication? How many wires are required for I2C communication? [5]
- 4. What is ARM microcontroller? Where ARM chips are used for ? [5]
- 5. What is interrupt service Mechanism? What is ISR Explain ? [5]
- 6. Compare between OS and RTOS. [5]

Group-C (Long Answer Type Question)

Answer any three of the following

[15 x 3 = 45]

7. (a) Explain about significance of embedded system and classification of the Embedded systems. [6]
(b) Explain the purpose of embedded systems. [4]
(c) Explain the elements of the embedded system with neat sketch. [5]
- 8. (a) Explain about the I2C protocol with neat sketch [6]
(b) Explain the Real Time Clock (RTC) and Watchdog timer. [4]
(c) Define interrupt latency? How to avoid it [5]
9. (a) Explain the shared memory concept in inter process communication [10]
(b) Explain how shared data problems can be overcome with task synchronization Techniques [5]
10. (a) List the features of the 8051 microcontrollers? [5]
(b) Describe the Architecture of 8051 microcontroller. [8]
(c) What are the four distinct types of memory in 8051? [2]
11. (a) Write short note: Watchdog timers. [5]
(b) Write short note: Interrupt Latency and deadline. [5]
(c) Write short note: Round robin Scheduling [5]