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NPTEL

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Courses » Embedded Systems-- Design Verification and Test

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Unit 2 - Introduction and Modeling

Course outline

- How to access the portal
- Introduction and Modeling
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  - Modeling Techniques – 1
  - Quiz : Assignment-1
- Modeling and Synthesis issues
- Architectural Synthesis of Hardwares
- System-level Design
- Temporal Logic
- Model Checking
- BDD and Symbolic Model Checking
- Introduction to Digital Testing
- Embedded System

Assignment-1

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment. **Due on 2018-08-15, 23:59 IST.**

1) An embedded system is a: ***1 point***

- Physical system enclosed within a computing system
- Physical system enclosed within a memory system
- Memory system enclosed within a physical system
- Computing system enclosed within a physical system

No, the answer is incorrect.
Score: 0

Accepted Answers:
Computing system enclosed within a physical system

2) A real-time system must: ***1 point***

- Always produce correct outputs within a short time
- Sometimes produce correct outputs within a stipulated time
- Always produce correct outputs within a stipulated time
- Sometimes produce correct outputs within a short time

No, the answer is incorrect.
Score: 0

Accepted Answers:
Always produce correct outputs within a stipulated time

3) Which of the following systems could reasonably be considered to be safety-critical? ***1 point***

- Video-editing software
- The software that controls traffic lights

The software that controls the engines of an aircraft

4) Consider an embedded system with an aperiodic control task which arrives at time instant 2 (from system start) and requires 4 time units to complete execution. The processor starts executing this job 2 time units subsequent to its arrival. What is the response time for this job? ***1 point***

- 2
- 4
- 6
- 8

No, the answer is incorrect.
Score: 0

Accepted Answers:
6

5) Design a mealy-type FSM to check whether a given integer is divisible by 3. What is the minimum number of states required for this design? ***1 point***

- 1
- 2
- 3
- 4

No, the answer is incorrect.
Score: 0

Accepted Answers:
3

6) A mealy-type FSM associates outputs to: ***1 point***

- States
- Transitions
- Both states and transitions
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Transitions

7) The statechart language can be used to represent: ***1 point***

- FSM
- FSMD
- HCFSM
- PSM

No, the answer is incorrect.
Score: 0

Accepted Answers:
FSM
FSMD
HCFSM

8) In a HCFSM, AND-decomposition is used to model: ***1 point***

- Concurrency
- Precedence
- Hierarchy
- Abstraction

No, the answer is incorrect.
Score: 0

Accepted Answers:
Concurrency

9) Accurate estimates on execution times are difficult to obtain in embedded systems due to: ***1 point***

- Micro-architectural intricacies such as pipeline stalls
- Contention for shared caches
- External inputs/outputs
- Contention among programs running on a set of processors

No, the answer is incorrect.
Score: 0

Accepted Answers:
Micro-architectural intricacies such as pipeline stalls
Contention for shared caches
External inputs/outputs
Contention among programs running on a set of processors

10) A hard real-time safety-critical embedded system should: ***1 point***

- Be verifiable and testable
- Exhibit guaranteed worst-case performance
- Exhibit high average-case performance
- Be predictable and reliable

No, the answer is incorrect.
Score: 0

Accepted Answers:
Be verifiable and testable
Exhibit guaranteed worst-case performance
Be predictable and reliable

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