University of Mumbai
Examinations summer 2022

Time: 2 hour 30 minutes   Max. Marks: 80

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DATE: 27/5/2022   QP CODE: 93460

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	----------- is a serial communication interface in Embedded system
Option A:	Bluetooth
Option B:	Cortex M3
Option C:	DMA controller
Option D:	ARM processor
2.	---------------------- Sensor is commonly used in Cruise control application.
Option A:	Thermal
Option B:	Heart rate
Option C:	Ultraviolet
Option D:	Proximity
3.	What does UML stand for?
Option A:	Universal model language
Option B:	Unified Modeling language
Option C:	Unit modeling language
Option D:	Unit model Line
4.	-------------can be used as a embedded system core.
Option A:	ASIC
Option B:	DMA Controller IC
Option C:	USART IC
Option D:	RS - 232
5.	Which testing method is known as White Box testing?
Option A:	A method which uses white coloured box
Option B:	A method which needs check system code & behavior of internal structures.
Option C:	A method which does not check for errors.
Option D:	A method which tests the functionality of application, without peering into its internal structures or workings.
6.	One of the major drawbacks of assembly language programming over C is
Option A:	Higher memory requirements
Option B:	program executes faster
Option C:	Every processor has its own instruction set.
Option D:	hardware specific instructions are available
7.	-------------is a time critical embedded real time system .
Option A:	Missile control
Option B:	Weather monitoring
Option C:	Coffee vending machine
Option D:	Washing machine
8.	Priority inversion is
Option A:	the condition in which a low priority task needs to wait for a high priority task

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Option B:	the condition in which a high priority task needs to wait for a low priority task
Option C:	the act of increasing the priority of a process .
Option D:	the act of decreasing the priority of a process dynamically
9.	Which one of the following embedded systems does not require an operating system?
Option A:	Air-craft control
Option B:	Car cruise control system
Option C:	Missile control
Option D:	Automatic Chocolate Vending machine
10.	_____is a key for resource sharing.
Option A:	Semaphore
Option B:	Pipes
Option C:	Context Switch
Option D:	Queue

Q2. (20 M)	Solve any Two Questions out of Three 10 marks each
A	Draw and Explain with neat diagram waterfall model.
B	Discuss the significance of Low Power modes in Cortex -M3
C	Discuss Selection Criteria of Sensors & Actuators with example.

Q3. (20 M)	Solve any Two Questions out of Three 10 marks each
A	What is the importance of Design metrics ? Which metrics are the most important in an embedded system? Support your answer with suitable diagrams and / or graphs.
B	Differentiate between Bluetooth & Zigbee communication interfaces.
C	How is Task Scheduling done in embedded system ? Explain Scheduling Algorithms.

Q4. (20 M)	Solve any Two Questions out of Three 10 marks each
A	What is Multitasking ? Explain TCB , Task states with neat diagram.
B	Design FSM & discuss Case study for Washing Machine Embedded Application.
C	Explain Free RTOS Task Management , Event & Time management features .