University of Mumbai

Examinations Summer 2022

Program: **BE Electronics and Telecommunication Engineering**

Curriculum Scheme: Rev-2016

Examination: BE Semester VII

Course Code: ECCDLO7035 and Course Name: Embedded System

Time: Max. Marks: 80

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Which is not true about Embedded system?
Option A:	Execution behavior may be deterministic
Option B:	Is Built around specialized hardware
Option C:	Always consists of Operating system
Option D:	Sensors may be used
2.	Which of the following is embedded system for data communication?
Option A:	USB mass storage device
Option B:	Network router
Option C:	Music system
Option D:	Digital camera
3.	How many cycles are required to execute 5 instructions in four stage pipelines?
Option A:	8
Option B:	7
Option C:	9
Option D:	5
4.	To speed up processing of data. cache memory is used. Cache memory mean,
Option A:	It is data memory in which program is store
Option B:	It is off chip memory
Option C:	It is Program memory which is used for storing data
Option D:	It is local copy of a portion of memory which need frequently
5.	RS485 is -------.
Option A:	Long distance Data transmission protocol
Option B:	Small distance
Option C:	Wireless communication protocol
Option D:	Electrical Bus interface
6.	ZigBee coordinator device
Option A:	Create network
Option B:	Join existing network
Option C:	Doesn't allow to join network
Option D:	Only broadcast the data
7.	In preemptive multitasking
Option A:	Each process gets equal chance for execution
Option B:	The execution of processes is preempted based on the scheduling policy
Option C:	Process doesn't get resume
Option D:	No any process wait for other process.

8.	Which scheduling policy is most suitable for a time-shared operating system
Option A:	Shortest job first
Option B:	Elevator
Option C:	Round Robin
Option D:	First cum first serve
9.	In IPC message passing is relatively fast because
Option A:	It is free from synchronization overheads
Option B:	It schedules the processes Optimizely
Option C:	Allow only single hop communication
Option D:	Terminated with high impedance
10.	In the Automatic chocolate vending machine the reprogramming of codes or relocation of code is not needed when --------.
Option A:	The price of chocolate changes
Option B:	Advertisement is changed
Option C:	Machine is relocated
Option D:	Machine feature changes

Q2	**Soive any Two Questions out of Three** **10 marks each**
A	Compare the following 1) Embedded Systems and General Computing Systems 2) CISC and RISC architecture of the processor
B	Explain coffee vending machine in detail
C	Define the terms Throughput, Turn Around Time and Waiting Time in scheduling of processes. Compare threads and processes of real time operating system

Q3	**Solve any Two Questions out of Three** **10 marks each**
A	Develop FSM model for following model. Driver/passenger seat belt system, generate alarm for 5 second if vehicle ignition is turned ON and seat belt is not fastened within 10 seconds. Alarm will be turned off after expiring its time (5 Second) or driver/passenger fasten the seat belt or ignition is turned off before expire time.
B	Explain design of GCD as a custom single purpose processor with the help of controller, data path and program.
C	Describe I2C protocol with read and write cycle.

Q4	**Solve any Two Questions out of Three** **10 marks each**
A	Explain operating System Architecture with the help of block diagram.
B	Three processes with process IDs P1, P2, P3 with estimated completion time 10, 5, 7 milliseconds respectively entered the ready queue together. A new process P4 with estimated completion time 2 ms enters the Ready queue after 2 ms. If scheduler is using Shortest Job First preemptive scheduling algorithm, Calculate average waiting and average Turn Around Time (TAT).
C	Explain Adaptive Cruise Control in car with the help of its components.