MCQS on Real Time Systems (6th Sem,CSE)

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1. The _____ Operating System pays more attention to the meeting of the time limits.
A. Network B. Distributed C. Online D. Real-time

Answer: D

2. In real time operating system is_____
A. kernel is not required B. process scheduling can be done only once task
C. must be serviced by its deadline period D. all processes have the same priority

Answer : C

3. The interrupt latency should be _____ for real time operating systems.
A. maximum B. minimal C. dependent on the scheduling D. zero

Answer: B

4. Which scheduling amount of CPU time is allocated to each process?
A. equal share scheduling B. none of the mentioned C. earliest deadline first scheduling
D. proportional share scheduling

Answer: D

5. When the System processes data instructions without any delay is called as
A. online system B. real-time system C. instruction system D. offline system

Answer : B

6. Which of the following is Preemptive, priority-based scheduling guarantees?
A. protection of memory B. hard real-time functionality   C. soft real-time functionality
D. all of the above

Answer: C

7. What is the priority of a real time task?

A.must degrade over time B.must not degrade over time

C.may degrade over time D.none of the mentioned

8. Priority inversion is solved by use of .....

A priority inheritance protocol B.two phase lock protocol   C. time protocol   D. all of the mentioned

Answer : A

9. The technique in which the CPU generates physical addresses directly is known as .

A.relocation register B.real addressing method C.virtual addressing   D.none of the mentioned

Answer: B

10. Memory management units .....

 A.increase the cost of the system B. increase the power consumption of the system

C.increase the time required to complete an operation D. all of the mentioned

Answer: D

1. In real time operating system _____ a) all processes have the same priority b) a task must be serviced by its deadline period c) process scheduling can be done only once d) kernel is not required

Answer: b

. 2. Hard real time operating system has _____ jitter than a soft real time operating system. a) less b) more c) equal d) none of the mentioned

 Answer: a Explanation: Jitter is the undesired deviation from the true periodicity.

 3. For real time operating systems, interrupt latency should be _____ a) minimal b) maximum c) zero d) dependent on the scheduling

 Answer: a Explanation: Interrupt latency is the time duration between the generation of interrupt and execution of its service.

4. In rate monotonic scheduling _____ a) shorter duration job has higher priority b) longer duration job has higher priority c) priority does not depend on the duration of the job d) none of the mentioned

Answer: a Explanation: None.

5. In which scheduling certain amount of CPU time is allocated to each process? a) earliest deadline first scheduling b) proportional share scheduling c) equal share scheduling d) none of the mentioned

Answer: b Explanation: None.

6. The problem of priority inversion can be solved by _____ a) priority inheritance protocol b) priority inversion protocol c) both priority inheritance and inversion protocol d) none of the mentioned Answer: a Explanation: None.

7. Time duration required for scheduling dispatcher to stop one process and start another is known as _____ a) process latency b) dispatch latency c) execution latency d) interrupt latency

Answer: b Explanation: None.

8. Time required to synchronous switch from the context of one thread to the context of another thread is called? a) threads fly-back time b) jitter c) context switch time d) none of the mentioned

Answer: c

9. Which one of the following is a real time operating system? a) RTLinux b) VxWorks c) Windows CE d) All of the mentioned Answer: d

 Explanation: None.

10. VxWorks is centered around _____ a) wind microkernel b) linux kernel c) unix kernel d) none of the mentioned Answer: a Explanation: None.

1. Identify the standard software components that can be reused? a) application manager b) operating system c) application software d) memory

Answer: b Explanation: There are certain software components that can be reused in an embedded system design. These are the operating systems, real-time databases and some other forms of middleware.

2. What does WCTE stand for? a) wait case execution time b) wait case encoder time c) worst case execution time d) worst code execution time

Answer: c Explanation: The WCTE is the worst case execution time which is an upper bound on the execution times of task. It can be computed for certain programs like while loops, programs without recursion, iteration count etc.

3. For which of the following WCET can be computed? a) C program b) assembly language c) VHDL d) program without recursion

 Answer: d Explanation: The WCET computing is a difficult task for assembly language and for computing WCTE for any high-level language without the knowledge of the generated assembly code is impossible. 4. The WCET of which component can be computed if the task is mapped to hardware? a) hardware b) task c) both task and hardware d) application manager

 Answer: a Explanation: The worst case execution time of the hardware can be computed if the task is mapped to the hardware which in turn requires the synthesis of the hardware.

 5. Which estimation approach is used by Jha and Dutt for hardware? a) accurate cost and performance value b) estimated cost and performance value c) performance value d) accurate cost

Answer: b Explanation: There are different estimation techniques used. One such is the estimated cost and performance value which is proposed by Jha and Dutt for hardware. The accurate cost and performance value is proposed by Jain et al for software.

6. Which estimate approach is more precise? a) estimated cost and performance value b) accurate cost and performance value c) performance value and execution time d) estimated cost

Answer: b Explanation: The accurate cost and performance value is possible if interfaces to software synthesis tools and hardware synthesis tools exist and is more precise than any other methods.

7. Which estimate approach takes more time to consume? a) accurate value b) estimated value c) accurate cost and performance value d) estimated cost and performance value

Answer: c Explanation: The accurate cost and the performance value method is time-consuming but the other estimating approaches are less time consuming.

8. Which estimation technique can be used if interfaces to software synthesis tools and hardware synthesis tools exist? a) Performance value b) estimated cost c) estimated cost and performance value d) accurate cost and performance value

Answer: d Explanation: The accurate cost and performance value is possible if interfaces to software synthesis tools and hardware synthesis tools exist.

9. Which of the following is the base for scheduling algorithm? a) WCET b) timec) execution time d) address accessing time

Answer: a Explanation: The base for scheduling algorithm is the WCET, worst case execution time which is a bound on the execution time of tasks. Such computing is undecidable in the general case, so it is decidable for certain programs only such as programs without recursion, iteration count, while loops etc

1. To schedule the processes, they are considered _____ a) infinitely long b) periodic c) heavy weight d) light weight

Answer: b Explanation: None.

2. If the period of a process is 'p', then what is the rate of the task? a) p2 b) 2*p c) 1/p d) p

Answer: c Explanation: None.

3. The scheduler admits a process using _____ a) two phase locking protocol b) admission control algorithm c) busy wait polling d) none of the mentioned

Answer: c Explanation: None.

4. The _____ scheduling algorithm schedules periodic tasks using a static priority policy with preemption. a) earliest deadline first b) rate monotonic c) first cum first served d) priority

Answer: b Explanation: None.

5. Rate monotonic scheduling assumes that the _____ a) processing time of a periodic process is same for each CPU burst b) processing time of a periodic process is different for each CPU burst c) periods of all processes is the same d) none of the mentioned

Answer: a Explanation: None. 6. In rate monotonic scheduling, a process with a shorter period is assigned _____ a) a higher priority b) a lower priority c) higher & lower priority d) none of the mentioned

Answer: a Explanation: None.

7. There are two processes P1 and P2, whose periods are 50 and 100 respectively. P1 is assigned higher priority than P2. The processing times are t1 = 20 for P1 and t2 = 35 for P2. Is it possible to schedule these tasks so that each meets its deadline using Rate monotonic scheduling? a) yes b) no c) maybe d) none of the mentioned

Answer: a Explanation: None.

8. If a set of processes cannot be scheduled by rate monotonic scheduling algorithm, then_____ a) they can be scheduled by EDF algorithm b) they cannot be scheduled by EDF algorithm c) they cannot be scheduled by any other algorithm d) none of the mentioned

Answer: c Explanation: None.

9. A process P1 has a period of 50 and a CPU burst of t1 = 25, P2 has a period of 80 and a CPU burst of 35. The total CPU utilization is? a) 0.90 b) 0.74 c) 0.94 d) 0.80

Answer: c Explanation: None.

10. A process P1 has a period of 50 and a CPU burst of t1 = 25, P2 has a period of 80 and a CPU burst of 35. Can the processes be scheduled without missing the deadlines? a) Yes b) No c) Maybe d) None of the mentioned

Answer: b Explanation: None.

1. What type of fault remains in the system for some period and then disappears? a) Permanent b) Transient c) Intermittent d) All of the mentioned

Answer: b Explanation: For example many faults in communication systems are transient in nature.

2. Which of the following approaches are used to achieve reliable systems? a) Fault prevention b) Fault removal c) Fault tolerance d) All of the mentioned

Answer: d Explanation: All the options lead to formation of a reliable system.

3. A system maintaining its integrity while accepting a temporary halt in its operation is said to be in a state of a) Full Fault Tolerance b) Graceful Degradation c) Fail Soft d) Fail Safe

Answer: d Explanation: None.

4. Which of the following Error Detection checks is not a part of Application detection? a) Hardware checks b) Timing checks c) Reversal checks d) Coding checks

Answer: a Explanation: Hardware is a part of environment detection check.

5. Exception handling is a type of a) forward error recovery mechanism b) backward error recovery mechanism c) All of the mentioned d) None of the mentioned

Answer: a Explanation: Exception handling is a forward error recovery mechanism, as there is no roll back to a previous state; instead control is passed to the handler so that recovery procedures can be initiated.

6. Non-occurrence of improper alteration of information is known as a) Available Dependability b) Confidential Dependability c) Maintainable Dependability d) Integral Dependability

Answer: d Explanation: Integrity is to keep the original content safe from alteration.

7. In N-version programming which is the independent generation of N, the value of N is a) greater than 1 b) less than 1 c) greater than 2 d) less than 2

Answer: c Explanation: N-version programming (NVP), also known as multiversion programming or multiple-version dissimilar software, is a method or process in software engineering where multiple functionally equivalent programs are independently generated from the same initial specifications.

8. In Log-based fault tolerance, logs of undetermined events are saved and replayed on failure. a) True b) False

Answer: a Explanation: None.

9. All fault-tolerant techniques rely on a) Integrity b) Dependability c) Redundancy d) None of the mentioned

Answer: c Explanation: All fault-tolerant techniques rely on extra elements introduced into the system to detect & recover from faults

10. It is imperative for a communicating processes to reach consistent recovery points to avoid the _____ effect, with backward error recovery mechanism. a) Static b) Dynamic c) Domino d) Whirlpool

Answer: c Explanation: None

1. In distributed systems, a logical clock is associated with _____ a) each instruction b) each process c) each register d) none of the mentioned

Answer: b Explanation: None.

2. If timestamps of two events are same, then the events are _____ a) concurrent b) non-concurrent c) monotonic d) non-monotonic

Answer: a Explanation: None.

3. If a process is executing in its critical section _____ a) any other process can also execute in its critical section b) no other process can execute in its critical section c) one more process can execute in its critical section d) none of the mentioned

Answer: b Explanation: None.

4. A process can enter into its critical section _____ a) anytime b) when it receives a reply message from its parent process c) when it receives a reply message from all other processes in the system d) none of the mentioned

Answer: c Explanation: None.

5. For proper synchronization in distributed systems _____ a) prevention from the deadlock is must b) prevention from the starvation is must c) prevention from the deadlock & starvation is must d) none of the mentioned

Answer: c Explanation: None.

6. In the token passing approach of distributed systems, processes are organized in a ring structure _____ a) logically b) physically c) both logically and physically d) none of the mentioned

Answer: a Explanation: None.

7. In distributed systems, what will the transaction coordinator do? a) starts the execution of transaction b) breaks the transaction into number of sub transactions c) coordinates the termination of the transaction d) all of the mentioned

Answer: d Explanation: None. 8. In case of failure, a new transaction coordinator can be elected by _____ a) bully algorithm b) ring algorithm c) both bully and ring algorithm d) none of the mentioned

Answer: c Explanation: None.

9. In distributed systems, election algorithms assumes that _____ a) a unique priority number is associated with each active process in system b) there is no priority number associated with any process c) priority of the processes is not required d) none of the mentioned

Answer: a Explanation: None.

10. According to the ring algorithm, links between processes are _____ a) bidirectional b) unidirectional c) both bidirectional and unidirectional d) none of the mentioned

Answer: b Explanation: None.

1. Which of the following works by dividing the processor's time? a) single task operating system b) multitask operating system c) kernel d) applications

Answer: b Explanation: The multitasking operating system works by dividing the processor's time into different discrete time slots, that is, each application requires a defined number of time slots to complete its execution.

2. Which of the following decides which task can have the next time slot? a) single task operating system b) applications c) kernel d) software

Answer: c Explanation: The operating system kernel decides which task can have the next time slot. So instead of the task executing continuously until completion, the execution of the processor is interleaved with the other tasks.

3. Which of the following controls the time slicing mechanism in a multitasking operating system? a) kernel b) single tasking kernel c) multitasking kernel d) application manager

Answer: c Explanation: The multitasking operating systems are associated with the multitasking kernel which controls the time slicing mechanism.

4. Which of the following provides a time period for the context switch? a) timer b) counter c) time slice d) time machine

Answer: c Explanation: The time period required for each task for execution before it is stopped and replaced during a context switch is known as the time slice.

5. Which of the following can periodically trigger the context switch? a) software interrupt b) hardware interrupt c) peripheral d) memory

Answer: b Explanation: The multitasking operating systems are associated with the multitasking kernel which controls the time slicing mechanism. The time period required for each task for execution before it is stopped and replaced during a context switch is known as the time slice. These are periodically triggered by a hardware interrupt from the system timer.

6. Which interrupt provides system clock in the context switching? a) software interrupt b) hardware interrupt c) peripheral d) memory

Answer: b Explanation: The multitasking operating systems deals with the multitasking kernel which controls the time slicing mechanism and the time period required for each task for execution before it is stopped and replaced during a context switch is known as the time slice which are periodically triggered by a hardware interrupt from the system timer. This hardware interrupt provides the system clock in which several interrupts are executed and counted before a context switch is performed.

7. The special tale in the multitasking operating system is also known as a) task control block b) task access block c) task address block d) task allocating block

Answer: a Explanation: When a context switch is performed, the current program or task is interrupted, so the processor's registers are saved in a special table which is known as task control block.

8. Which of the following stores all the task information that the system requires? a) task access block b) register c) accumulator d) task control block

Answer: d Explanation: The task control block stores all the task information that the system requires and this is done when the context switch is performed so that the currently running program is interrupted.

9. Which of the following contains all the task and their status? a) register b) ready list c) access list d) task list

Answer: b Explanation: The 'ready' list possesses all the information regarding a task, that is, all the task and its corresponding status which is used by the scheduler to decide which task should execute in the next time slice.

10. Which determines the sequence and the associated task's priority? a) scheduling algorithm b) ready list c) task control block d) application register

Answer: a Explanation: The scheduling algorithm determines the sequence and an associated task's priority. It also determines the present status of the task.

11. Which can control memory usage? a) operating system b) applications c) hardware d) kernel

Answer:d Explanation: The kernel can control the memory usage and it can also prevent the tasks from corrupting each other.

12. Which can control the memory sharing between the tasks? a) kernel b) application c) software d) OS

Answer: a Explanation: The kernel can control memory sharing between tasks which allow sharing common program modules.

13. Which of the following can implement the message passing and control? a) application software b) operating system c) software d) kernel

Answer: d Explanation: The kernel can implement the message passing and control which acts as a message passer and controller between the tasks.

14. How many types of messages are associated with the real-time operating system? a) 2 b) 3 c) 4 d) 5

Answer: a Explanation: There are two basic types of messages associated with the real-time operating system. These are semaphores and messages.

15. Which of the following can carry information and control task? a) semaphore b) messages c) flags d) address message

Answer: b Explanation: The messages can carry information and it can also control the task regarding the real-time operating systems. These are also known as event

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Answer: a Explanation: None.

2. In which scheduling certain amount of CPU time is allocated to each process? a) earliest deadline first scheduling b) proportional share scheduling c) equal share scheduling d) none of the mentioned

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