

1. For real time operating systems, interrupt latency should be \_\_\_\_\_ .

### Answers

1. Maximum
2. Minimal
3. Zero
4. Dependent on the scheduling

2. There are 10 different processes running on a workstation. Idle processes are waiting for an input event in the input queue. Busy processes are

### Answers

1.  $t_Q = 15\text{ms}$
2.  $t_Q = 40\text{ms}$
3.  $t_Q = 45\text{ms}$
4.  $t_Q = 50\text{ms}$

3. Consider the following set of processes, the length of the CPU burst time given in milliseconds :

Process	Burst time
P1	6
P2	8
P3	7
P4	3

Assuming the above process being scheduled with the SJF scheduling algorithm :

### Answers

1. The waiting time for process P1 is 3ms
2. The waiting time for process P1 is 0ms
3. The waiting time for process P1 is 16ms
4. The waiting time for process P1 is 9ms

4. The \_\_\_\_\_ scheduling algorithm schedules periodic tasks using a static priority policy with preemption.

### Answers

1. earliest deadline first
2. rate monotonic
3. first come first served
4. priority

5. The method `munlock()` method does \_\_\_\_\_ .

#### Answers

1. Unlock complete process address.
2. Lock complete process address.
3. Unlock region locked using `mlock`
4. None of the above

6. In FreeRTOS each call to `vTaskSwitchContext()` checks \_\_\_\_\_ .

#### Answers

1. if any task is unblocked due to delay function
2. if any task is blocked due to delay function
3. if any process is blocked due to delay function
4. in any process is unblocked due to delay function

7. In proportional share algorithm,  
CPU time = 100 shares ( $T = 100$ )  
 $P1 = 50$  shares  
 $P2 = 15$  shares  
 $P3 = 20$  shares  
What is the cpu utilization ?

#### Answers

1. 0.079
2. 0.85
3. 0.085
4. 0.79

8. RTOS makes use of Cortex-M3

#### Answers

1. SysTick
2. PendSV
3. SVC interrupts
4. All of the above

9. Rate Monotonic Algorithm upper bound for a system with 4 tasks is:

#### Answers

1. 0.66
2. 0.95
3. 0.44
4. 0.76

10. What is the disadvantage of real addressing mode?

#### Answers

1. there is a lot of cost involved
2. time consumption overhead
3. absence of memory protection between processes
4. restricted access to memory locations by processes

11. Which type of semaphore initializes by `rt_sem_init()`

#### Answers

1. Resources
2. Binary
3. Counting
4. None of these

12. Which RTOS scheduling algorithm cannot use CPU upto 100% ?

#### Answers

1. Proportional share
2. Earliest deadline first
3. Rate Monotonic Scheduling
4. None of the above

13. When high priority task is indirectly preempted by medium priority task effectively

#### Answers

1. Priority Inversion
2. Priority Removal
3. Priority Exchange
4. Priority Modification

14. A process P1 has a period of 50 and a CPU burst of  $t_1 = 25$ , P2 has a period of 80 and a CPU burst of 35. The total CPU utilization is :

#### Answers

1. 0.90
2. 0.74
3. 0.94
4. 0.80

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15. If the taskPrioritySet is called on a blocked task, its new priority \_\_\_\_\_



#### Answers

1. is considered while selecting the task to be unblocked
2. is not considered while selecting the task to be unblocked
3. is considered while selecting the task to be blocked
4. is not considered while selecting the task to be blocked

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16. Scheduling jitter means,

#### Answers

1. The variation in scheduling latency
2. The variation in interrupt latency
3. similar to scheduling latency
4. None of the above

17. What parameter is of less significance with reference to RTOS?

#### Answers

1. Interrupt latency
2. Interrupt recovery time
3. Interrupt response time
4. Throughput

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18. The scheduler admits a process using :

#### Answers

1. two phase locking protocol
2. admission control algorithm
3. busy wait polling
4. none of the above

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19. Which of the following describes the RTOS design philosophy best Select one



#### Answers

1. Maximize the throughput of the system
2. Maximize the processor utilization
3. Minimizing the response time
4. Response within certain stipulated time period

20. If there are a total of  $T = 100$  shares to be divided among three processes, A will have \_\_\_\_\_ percent of the total processor time.

◀ ▶

#### Answers

1. 20
2. 15
3. 50
4. None of these

21. There are two processes P1 and P2, whose periods are 50 and 100 respectively,

◀ ▶

#### Answers

1. yes
2. no
3. maybe
4. none of the mentioned

22. RTAI API is used to execute semaphore only if calling process is not blocked

◀ ▶

#### Answers

1. `rtf_sem_post()`
2. `rtf_sem_wait()`
3. `rtf_sem_trywait()`
4. `rtf_sem_timed_wait()`

23. If the period of a process is  $p$ , then the rate of the task is :

#### Answers

1.  $p/2$
2.  $2*p$
3.  $1/p$
4.  $p$

24. Under multiprogramming, turnaround time for short jobs is usually \_\_\_\_\_

◀ ▶

#### Answers

1. Lengthened; Shortened
2. Shortened; Lengthened
3. Shortened; Shortened
4. Shortened; Unchanged

25. \_\_\_\_\_ to used to allocate a message pipe buffer.

#### Answers

1. rtf\_pipe\_alloc()
2. rt\_alloc\_pipe()
3. **rt\_pipe\_alloc()**
4. rtf\_alloc\_pipe()

26. Which of the following is an independent scheduling?

#### Answers

1. LL
2. LST
3. EDD
4. **RMS**

27. Assume a task set:  $\{(1,3),(1,5),(1,6),(2,10)\}$   
what is the CPU utilization time?

#### Answers

1. 0.84
2. **0.89**
3. 0.92
4. 0.93

28. A \_\_\_\_\_ of a task is the time at which the release of a task will prod



#### Answers

1. soft instance
2. hard instance
3. **critical instance**
4. None of the above

29. Reentrant function is one that

#### Answers

1. should be executed by only one task at a time otherwise data corruption occurs
2. will allow 2 tasks to use it but not more than 2
3. **will allow any number of task to execute it without data corruption**
4. None of the above

30. Which of the following is not work of the Real time executive?

### Answers

1. Task Management
2. IPC
3. Memory Management And File IO
4. Scheduling

31. In Rate monotonic analysis the schedulability of a task can be calculated by

### Answers

1.  $\sum (E_i/T_i) < U(n) = n(2^{1/n} - 1)$
2.  $\sum (E_i/T_i) \leq U(n) = n(2^{1/n} - 1)$
3.  $\sum (E_i/T_i) \leq U(n) = n(2^n - 1)$
4.  $\sum (E_i/T_i) \leq U(n) = n(2^n)$

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

### Answers

1. must degrade over time
2. must not degrade over time
3. may degrade over time
4. none of the mentioned

33. What is Event latency?

### Answers

1. the amount of time an event takes to occur from when the system started
2. the amount of time from the event occurrence till the system stops
3. the amount of time from event occurrence till the event crashes
4. the amount of time that elapses from when an event occurs to when it is served

34. The Cortex-M3 port includes which of the following standard FreeRTOS features?

### Answers

1. Pre-emptive or co-operative operation
2. Very flexible task priority
3. Queues
4. Mutex
5. All of the above

35. In a round robin scheduler the execution window is set for 2 time slots and with 3,4,2 time slots of execution respectively. Which task will complete first finish one cycle of all tasks



#### Answers

1. T1, 10
2. T3, 9
3. T2, 10
4. T3, 10

36. Preemptive priority based scheduling guarantees:

#### Answers

1. Hard real time functionality
2. Soft real time functionality
3. Protection of memory
4. None of the above

37. Rate monotonic scheduling assumes that the :

#### Answers

1. processing time a periodic process is different for each CPU burst.
2. processing time a periodic process is same for each CPU burst.
3. periods of all processes is the same. D. none of the mentioned
4. none of these

38. Complex scheduling algorithms :

#### Answers

1. Are very appropriate for very large computers
2. Use minimal resources
3. Use many resources
4. All of the above

39. Which one of the following is a real time operating system?

#### Answers

1. RTLinux
2. VxWorks
3. Windows CE
4. All of the mentioned



40. If a set of processes cannot be scheduled by rate monotonic scheduling algo



### Answers

1. They can be scheduled by EDF algorithm
2. They cannot be scheduled by EDF algorithm
3. They cannot be scheduled by any other algorithm
4. None of the above