

## **RTS MODULE-I MCQs**

### **CHAPTER 1: INTRODUCTION**

- 1) Quantitative notion of time is called \_\_\_\_?
  - a) Logical time
  - b) Real time
  - c) Virtual time
  - d) None of the above
- 2) Qualitative expression of time is called \_\_\_\_ ?
  - a) Logical time
  - b) Virtual time
  - c) Both a & b
  - d) None
- 3) Every real time task is associated with some \_\_\_\_\_?
  - a) Period
  - b) Time constraint
  - c) Failure
  - d) Criticality
- 4) Cost of failure of a task is measured by what?
  - a) Safety
  - b) Reliability
  - c) Task Criticality
  - d) Throughput
- 5) Which of the following is a hardware fault tolerance technique?
  - a) N-Version programming
  - b) Triple modular redundancy
  - c) Checkpointing
  - d) Recovery blocks
- 6) As per the consequence of a task missing its deadline, how many types of real time tasks are there?
  - a) 3
  - b) 4
  - c) 2
  - d) 6
- 7) Which of the following is not a type of timing constraint?
  - a) Delay
  - b) Distance
  - c) Duration
  - d) Deadline
- 8) A system is said to be real time when \_\_\_\_\_ of time is necessary to describe the behaviour of the system.
  - a) Qualitative expression
  - b) Quantitative expression
  - c) Both a & b

- d) None of these
- 9) Which of the following is a type of real time task?
  - a) Hard real time task
  - b) Soft real time task
  - c) Firm real time task
  - d) All of the above
- 10) Which model is used to describe the timing constraint of a real time system?
  - a) FSM
  - b) PDA
  - c) TM
  - d) EFSM
- 11) Every safety –critical real time system has a fail-safe state.
  - a) True
  - b) False
- 12) A sensor converts \_\_\_\_\_ signal to \_\_\_\_\_ signal.
  - a) Electrical, physical
  - b) Physical, Electrical
  - c) Analog, Digital
  - d) Digital, Analog
- 13) Which signal conditioning unit is used to reduce the noise components in a signal?
  - a) Signal mode conversion
  - b) Frequency range shifting
  - c) Voltage level shifting
  - d) Voltage amplification
- 14) An actuator converts \_\_\_\_\_ signal to \_\_\_\_\_ signal.
  - a) Electrical, physical
  - b) Physical, Electrical
  - c) Analog, Digital
  - d) Digital, Analog
- 15) Which of the following is an application area of real time system?
  - a) Laser Printer
  - b) MPFI system
  - c) SCADA
  - d) All of these
- 16) Before, after words are used in which time?
  - a) Real time
  - b) Logical time
- 17) What is the other name of logical time?
  - a) Real time
  - b) Virtual time
  - c) Execution time
  - d) Processing time
- 18) ADC is the abbreviated form of \_\_\_\_\_.
  - a) Analog to Digital Converter
  - b) Analog to Digital Conversion

- c) Analog to Digital Conditioning
  - d) Analog to Digital Compressor
- 19) Which of the following is a characteristic of a real time system?
- a) Time constraints
  - b) Custom hardware
  - c) Stability
  - d) All of these
- 20) Which timing constraint is imposed on response event?
- a) Performance constraint
  - b) Behavioural constraint
- 21) An event can be generated by the \_\_\_\_\_.
- a) System
  - b) Environment
  - c) Both a & b
  - d) None of these
- 22) In which type of real time task, a system is said to be failed if it does not produce its result before the specified time bound?
- a) Hard real time task
  - b) Soft real time task
  - c) Firm real time task
  - d) All of the above
- 23) Which of the following technique is adopted to develop highly reliable software?
- a) Fault tolerance
  - b) Error avoidance
  - c) Error detection and removal
  - d) All of the above
- 24) Name the state into which if a system enters then no damage would result when failure occurs.
- a) Safety state
  - b) Safe-Reliable state
  - c) Task-criticality state
  - d) Fail-safe state
- 25) In which of the following case , the deadline is defined between two stimuli?
- a) SS
  - b) SR
  - c) RR
  - d) RS

## **CHAPTER 2: REAL TIME TASK SCHEDULING**

- 1) A real time task can occur many times, each time it occurs is called \_\_\_\_\_.
  - a) Task Example
  - b) Task Instance
  - c) Task precedence
  - d) None of these
- 2) Which of the following is a type of real time task?
  - a) Periodic task
  - b) Sporadic task
  - c) Aperiodic task
  - d) All of the above
- 3) The point on time line at which scheduling decision is made is called?
  - a) Scheduling point
  - b) Point of scheduling
  - c) Scheduling time
  - d) None of these
- 4) Which scheduler is called off-line scheduler?
  - a) Clock driven
  - b) Event driven
  - c) Hybrid
  - d) All of these
- 5) Foreground-background scheduler belongs to which type of scheduler?
  - a) Clock driven
  - b) Event driven
  - c) Hybrid
  - d) None of these
- 6) In EDF scheduling algorithm, the main focus is on what?
  - a) Task period
  - b) Task deadline
  - c) Task execution time
  - d) Task delay
- 7) RMA stands for \_\_\_\_\_.
  - a) Rate Monotonic Analyser
  - b) Rate Monotonic Analysis
  - c) Ratio Monotonic Analysis
  - d) Ratio Monotonic Analyser
- 8) Which of the following is a dynamic priority based scheduling algorithm?
  - a) RMA
  - b) EDF
- 9) Which constraints are taken into consideration while choosing a suitable frame size for cyclic scheduling?

- a) Satisfaction of task deadline
  - b) Minimization of table size
  - c) Minimum context switching
  - d) All of the above
- 10) Which of the following is not a type of real time task scheduler based on target platform?
- a) Distributed
  - b) Uniprocessor
  - c) Planning based
  - d) Multiprocessor
- 11) Data sharing among tasks does not necessarily impose any particular ordering among tasks.
- a) True
  - b) False
- 12) Which real time task recurs at random instants?
- a) Periodic task
  - b) Sporadic task
  - c) Aperiodic task
  - d) All of the above
- 13) Ratio of execution time to period is called what?
- a) Jitter
  - b) Utilization
  - c) Efficiency
  - d) Throughput
- 14) Which of the following is not an event driven scheduling algorithm?
- a) Simple priority based
  - b) EDF
  - c) Round-robin
  - d) RMA
- 15) In which scheduling algorithm, the task having the shortest deadline is taken up for scheduling at every scheduling point?
- a) RMA
  - b) Cyclic
  - c) MLF
  - d) EDF
- 16) Which of the following is a shortcoming of EDF?
- a) Resource sharing problem
  - b) Efficient Implementation Problem
  - c) Transient overload problem
  - d) All of these
- 17) What is the relationship between priority and rate of a task in RMA?
- a) Inversely proportional
  - b) Directly proportional
  - c) Equal
  - d) None of these
- 18) When RMA is not considered as an optimal scheduling algorithm ?
- a) Task period and deadline differs

- b) Task phase and deadline differs
  - c) Task priority and deadline differs
  - d) Task period and execution time differs
- 19) In event driven scheduling, the scheduling points are defined by,
- a) Task completion
  - b) Task arrival
  - c) Self suspension events
  - d) All of these
- 20) Which of the following is necessary condition for a set of tasks to be RMA schedulable?
- a)  $\sum_{i=1}^n \frac{e_i}{p_i} = 1$
  - b)  $\sum_{i=1}^n \frac{e_i}{p_i} < 1$
  - c)  $\sum_{i=1}^n \frac{e_i}{p_i} \leq 1$
  - d)  $\sum_{i=1}^n \frac{e_i}{p_i} \geq 1$
- 21) LCM of periods of a task set is called what?
- a) Cycle
  - b) Frame
  - c) Major Cycle
  - d) Minor Cycle
- 22) In which scheduler, the scheduling point is determined by timer interrupt?
- a) Clock driven
  - b) Event driven
  - c) Hybrid
  - d) None of these
- 23) What is the necessary and sufficient condition for a set of real time tasks to be EDF schedulable?
- a)  $\sum_{i=1}^n \frac{e_i}{p_i} = 1$
  - b)  $\sum_{i=1}^n \frac{e_i}{p_i} < 1$
  - c)  $\sum_{i=1}^n \frac{e_i}{p_i} \leq 1$
  - d)  $\sum_{i=1}^n \frac{e_i}{p_i} \geq 1$
- 24) Which deadline is the time interval between task starting time and deadline occurrence time?
- a) Absolute
  - b) Relative
  - c) Real
  - d) Comparative
- 25) A periodic task can be described by,
- a) Period
  - b) Phase
  - c) Execution time
  - d) Deadline
  - e) All of these



**Multiple Choice Questions**

8.1 Identify which of these are real-time applications scenarios:

- a. An on-line bus ticketing system
- b. Printing of annual report of a company's annual report
- c. Reconciling a day's transactions in an account book of a small company
- d. An aircrafts' yaw control system

8.2 Identify the category of the following real-time systems as "hard, soft or firm"

- a. An on-line celebrity cricket bat auction
- b. A patient monitoring system in an ICU
- c. A library book reservation system
- d. A bank's credit card defaulters notice generation program

8.3 Which of the following describes the RTOS design philosophy best

- a. Maximize the throughput of the system
- b. Maximize the processor utilization
- c. Minimizing the response time
- d. Response within certain stipulated time period

8.4 Which of the following are commercially claimed RTOSs

- a. Linux
- b. Windows CE
- c. Mindows NT
- d. Vx works
- e. Sun Solaris

8.5 Scheduling of tasks is a very important consideration in RTOS. Which of the following best described the scheduling policy design:

- a. The scheduler must follow a pre-emptive policy
- b. The scheduler must not use pre-emptive policy option
- c. The scheduler must not only use pre-emptive policy options with the priority considerations.
- d. The scheduler must not use pre-emptive policy option, but must employ priority consideration.

8.6 Keeping a task's schedulability in mind, which way a task may be scheduled:



- a. The task has a predetermined time after which it may be scheduled.
- b. The task has a predetermined time before which it may be scheduled
- c. The task has a predetermined time interval during which it must be scheduled any time.
- d. The task start has a worst case delay estimate before which it must be scheduled.

8.7 Describe which of these scheduling policies is most suited for controlling a set of periodic tasks.

- a. FCFS
- b. Least laxity first
- c. Earliest dead line first
- d. Rate monotonic policy schedule

8.8 Which of the following strategy is employed for overcoming the priority inversion problem?

- a. Abandon the notion of priorities altogether
- b. Have only two priority levels
- c. Allow for temporarily raising the priority of lower level priority process
- d. Use pre-emptive policies strictly based on priorities

8.9 Is it true that, in general, in an embedded system the application tasks have higher priority than system tasks?

- a. Yes
- b. No

8.10 Where are the device drivers located in RTOSs with a microkernel:

- a. In the kernel space
- b. In the user space
- c. In separately allocated space which is neither kernel space nor user space.

**1. What is the Real-time systems?**

- A. Used for monitoring events as they occur
- B. Primarily used on [mainframe computers](#)
- C. Used for real-time interactive users
- D. Used for program development

**Answer - A**

**2. The \_\_\_\_\_ Operating System pays more attention to the meeting of the [time](#) limits.**

- A. Network
- B. Distributed
- C. Online
- D. Real-time

**Answer - D**

**3. 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**

**4. The [interrupt](#) latency should be \_\_\_\_\_ for real time operating systems.**

- A. maximum
- B. minimal
- C. dependent on the scheduling
- D. zero

**Answer - B**

**5. 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**

**6. What is the Use of the robot by car manufacturing companies the example of...**

- A. applicant controlled computers
- B. user-controlled computers
- C. machine controlled computers
- D. [network](#) controlled computers

**Answer - C**

**7. 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**

8. Which single task of a particular application is process is a type of processor...

- A. applicant processor
- B. one task processor
- C. [real time](#) processor
- D. dedicated processor

**Answer - D**

9. The Designing of system take into considerations of\_\_\_\_\_.

- A. operating system
- B. communication system
- C. hardware
- D. all of the above
- E. none of these

**Answer D**

10. The Time duration required for scheduling dispatcher to stop one process and start another is called...

- A. dispatch latency
- B. process latency
- C. interrupt latency
- D. execution latency

**Answer - A**

11. Which of the following is correct in real time?

- A. non-preemptive kernels
- B. preemptive kernels
- C. neither preemptive nor non-preemptive kernels
- D. preemptive kernels or non preemptive kernels

**Answer - B**

12. 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
- E. none of these

**Answer - C**



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

Explanation: None.

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

Explanation: None.

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. What is the disadvantage of real addressing mode?

- a) there is a lot of cost involved
- b) time consumption overhead
- c) absence of memory protection between processes
- d) restricted access to memory locations by processes

Answer: c

Explanation: None.

2. Preemptive, priority based scheduling guarantees \_\_\_\_\_

- a) hard real time functionality
- b) soft real time functionality
- c) protection of memory
- d) none of the mentioned

Answer: b

Explanation: None.

3. Real time systems must have \_\_\_\_\_

- a) preemptive kernels
- b) non preemptive kernels
- c) preemptive kernels or non preemptive kernels
- d) neither preemptive nor non preemptive kernels

Answer: a

Explanation: None.

4. What is Event latency?



- a) the amount of time an event takes to occur from when the system started
- b) the amount of time from the event occurrence till the system stops
- c) the amount of time from event occurrence till the event crashes
- d) the amount of time that elapses from when an event occurs to when it is serviced.

Answer: d

Explanation: None.

5. Interrupt latency refers to the period of time \_\_\_\_\_

- a) from the occurrence of an event to the arrival of an interrupt
- b) from the occurrence of an event to the servicing of an interrupt
- c) from arrival of an interrupt to the start of the interrupt service routine
- d) none of the mentioned

Answer: c

Explanation: None.

6. Real time systems need to \_\_\_\_\_ the interrupt latency.

- a) minimize
- b) maximize
- c) not bother about
- d) none of the mentioned

Answer: a

Explanation: None.

7. The amount of time required for the scheduling dispatcher to stop one process and start another is known as \_\_\_\_\_

- a) event latency
- b) interrupt latency
- c) dispatch latency
- d) context switch

Answer: c

Explanation: None.

8. The most effective technique to keep dispatch latency low is to \_\_\_\_\_

- a) provide non preemptive kernels
- b) provide preemptive kernels
- c) make it user programmed
- d) run less number of processes at a time

Answer: b



Explanation: None.

9. 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

Explanation: None.

1. In a real time system the computer results \_\_\_\_\_

- a) must be produced within a specific deadline period
- b) may be produced at any time
- c) may be correct
- d) all of the mentioned

Answer: a

Explanation: None.

2. In a safety critical system, incorrect operation \_\_\_\_\_

- a) does not affect much
- b) causes minor problems
- c) causes major and serious problems
- d) none of the mentioned

Answer: c

Explanation: None.

3. Antilock brake systems, flight management systems, pacemakers are examples of \_\_\_\_\_

- a) safety critical system
- b) hard real time system
- c) soft real time system
- d) safety critical system and hard real time system

Answer: d

Explanation: None.

4. In a \_\_\_\_\_ real time system, it is guaranteed that critical real time tasks will be completed within their deadlines.

- a) soft
- b) hard
- c) critical





d) none of the mentioned

Answer: b

Explanation: None.

5. Some of the properties of real time systems include \_\_\_\_\_

a) single purpose

b) inexpensively mass produced

c) small size

d) all of the mentioned

Answer: d

Explanation: None.

6. The amount of memory in a real time system is generally \_\_\_\_\_

a) less compared to PCs

b) high compared to PCs

c) same as in PCs

d) they do not have any memory

Answer: a

Explanation: None.

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

Answer: b

Explanation: None.

8. 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

Explanation: None.

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

a) relocation register method

b) real addressing

c) virtual addressing

d) none of the mentioned



Answer: b

Explanation: None.

1. Earliest deadline first algorithm assigns priorities according to

- 
- a) periods
  - b) deadlines
  - c) burst times
  - d) none of the mentioned

Answer: b

Explanation: None.

2. 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 \_\_\_\_\_

- a) 0.90
- b) 0.74
- c) 0.94
- d) 0.80

Answer: c

Explanation: None.

3. 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 priorities of P1 and P2 are?

- a) remain the same throughout
- b) keep varying from time to time
- c) may or may not be change
- d) none of the mentioned

Answer: b

Explanation: None.

4. 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., can the two processes be scheduled using the EDF algorithm without missing their respective deadlines?

- a) Yes
- b) No
- c) Maybe
- d) None of the mentioned



Answer: a

Explanation: None.

5. Using EDF algorithm practically, it is impossible to achieve 100 percent utilization due to \_\_\_\_\_

- a) the cost of context switching
- b) interrupt handling
- c) power consumption
- d) all of the mentioned

Answer: a

Explanation: None.

6. T shares of time are allocated among all processes out of N shares in \_\_\_\_\_ scheduling algorithm.

- a) rate monotonic
- b) proportional share
- c) earliest deadline first
- d) none of the mentioned

Answer: b

Explanation: None.

7. If there are a total of  $T = 100$  shares to be divided among three processes, A, B and C. A is assigned 50 shares, B is assigned 15 shares and C is assigned 20 shares.

A will have \_\_\_\_\_ percent of the total processor time.

- a) 20
- b) 15
- c) 50
- d) none of the mentioned

Answer: c

Explanation: None.

8. If there are a total of  $T = 100$  shares to be divided among three processes, A, B and C. A is assigned 50 shares, B is assigned 15 shares and C is assigned 20 shares.

B will have \_\_\_\_\_ percent of the total processor time.

- a) 20
- b) 15
- c) 50
- d) none of the mentioned

Answer: b



Explanation: None.

9. If there are a total of  $T = 100$  shares to be divided among three processes, A, B and C. A is assigned 50 shares, B is assigned 15 shares and C is assigned 20 shares.

C will have \_\_\_\_\_ percent of the total processor time.

- a) 20
- b) 15
- c) 50
- d) none of the mentioned

Answer: a

Explanation: None.

10. If there are a total of  $T = 100$  shares to be divided among three processes, A, B and C. A is assigned 50 shares, B is assigned 15 shares and C is assigned 20 shares.

If a new process D requested 30 shares, the admission controller would

- 
- a) allocate 30 shares to it
  - b) deny entry to D in the system
  - c) all of the mentioned
  - d) none of the mentioned

Answer: b

Explanation: None.

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)  $p^2$
- b)  $2 \cdot p$
- 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  $t_1 = 20$  for P1 and  $t_2 = 35$  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  $t_1 = 25$ , 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  $t_1 = 25$ , 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 Type of processor in which single task of a particular application is process is termed as

Select one:

- a. real time processor
- b. dedicated processor
- c. applicant processor
- d. one task processor

The correct answer is: dedicated processor

2 In real time operating system

Select one:

- 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

The correct answer is: a task must be serviced by its deadline period

3 RM Schedulable upper bound for a system with 4 tasks is

Select one:

- a. 0.66
- b. 0.95
- c. 0.44
- d. 0.76

The correct answer is: 0.76

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



Select one:

- a. RTLinux
- b. VxWorks
- c. Windows CE
- d. All of the mentioned

The correct answer is: All of the mentioned

5 IRIS Stand for :

Select one:

- a. Increased Reward with Increased Service
- b. Iney Reward with Increased Service
- c. Increased Raw with Increased Service
- d. None of these

The correct answer is: Increased Reward with Increased Service

6 Earliest deadline first (EDF) is a dynamic priority scheduling algorithm used in real-time operating systems to place processes in a priority queue.

Select one:

- a. True
- b. False

The correct answer is: True

7 Consider the following inequalities with respect to a Real-Time system with N tasks and total utilization u

- 1.  $u < N(21/N - 1)$
- 2.  $u < 1$  which among the following is TRUE for a RM schedulable task set.

Select one:

- a. Both 1 and 2 are necessary
- b. 1 is necessary and 2 is sufficient
- c. 2 is necessary and 1 is sufficient
- d. Both 1 and 2 are sufficient

The correct answer is: 2 is necessary and 1 is sufficient

8 Consideration of storage, input and output devices are considered as requirement of

Select one:

- a. hardware requirement





- b. communication requirement
- c. software requirement
- d. process requirement

The correct answer is: hardware requirement

9 Which of the following describes the RTOS design philosophy best  
Select one:

- a. Maximize the throughput of the system
- b. Maximize the processor utilization
- c. Minimizing the response time
- d. Response within certain stipulated time period

The correct answer is: Minimizing the response time

10 Use of robot by the car manufacturing companies is an example of  
Select one:

- a. machine controlled computers
- b. network controlled computers
- c. applicant controlled computers
- d. user controlled computers

The correct answer is: machine controlled computers

11 Designing of system take into considerations of  
Select one:

- a. hardware
- b. communication system
- c. operating system
- d. all of above

The correct answer is: all of above

12 Time required to synchronous switch from the context of one thread to the context of another thread is called

Select one:

- a. threads fly-back time
- b. jitter
- c. context switch time
- d. none of the mentioned

The correct answer is: context switch time



13 Scheduling of tasks is a very important consideration in RTOS. Which of the following best described the scheduling policy design:

Select one:

- a. The scheduler must follow a pre-emptive policy
- b. The scheduler must not use pre-emptive policy option
- c. The scheduler must not only use pre-emptive policy options with the priority considerations.
- d. The scheduler must not use pre-emptive policy option, but must employ priority consideration.

The correct answer is: The scheduler must not use pre-emptive policy option, but must employ priority consideration.

14 soft real time operating system has \_\_\_ jitter than a Hard real time operating system

Select one:

- a. less
- b. more
- c. equal
- d. none of the mentioned

The correct answer is: more

15 System which processes the data instructions without any delay is classified as Select one:

- a. online system
- b. offline system
- c. instruction system
- d. real time system

The correct answer is: real time system

16 Slack time

Select one:

- a. is the amount of time left after a job if the job was started now.
- b. is the amount of time left before a job if the job was started now.
- c. is the amount of time left from a job if the job was started now.
- d. is the amount of time left required by a job if the job was started now.

The correct answer is: is the amount of time left after a job if the job was



started now.

17 The priority of a real time task :

Select one:

- a. must degrade over time
- b. must not degrade over time
- c. may degrade over time
- d. none of the mentioned

The correct answer is: must not degrade over time

18 VxWorks is centered around S

elect one:

- a. wind microkernel
- b. linux kernel
- c. unix kernel
- d. none of the mentioned

The correct answer is: wind microkernel

19 Delay and Jitter :

Select one:

- a. mean the same thing
- b. are two completely different things
- c. all of the mentioned
- d. none of the mentioned

The correct answer is: are two completely different things

20 if jobs have unpredictable release times, a task is termed :

Select one:

- a. aperiodic
- b. sporadic
- c. periodic.
- d. None of these

The correct answer is: aperiodic



1. \_\_\_\_\_ OS pays more attention on the meeting of the time limits.

- a. Distributed
- b. Network
- c. Real time
- d. Online

Answer: (c).Real time

---

2. Real time systems are \_\_\_\_\_.

- a. Primarily used on mainframe computers
- b. Used for monitoring events as they occur
- c. Used for program development
- d. Used for real time interactive users

Answer: (b).Used for monitoring events as they occur

---

3. In \_\_\_\_\_ OS, the response time is very critical.

- a. Multitasking



- b. Batch
- c. Online
- d. Real-time

**Answer:** (d). Real-time

---

**4.** Which scheduling policy is most suitable for a time-shared operating system

- a. Shortest-job First.
- b. Elevator.
- c. Round-Robin.
- d. First-Come-First-Serve.

**Answer:** (c).Round-Robin.

---

**5.** The basic types of OS are .....

- a. batch and time sharing
- b. sequential and real time



- c. direct and interactive
- d. batch and interactive

**Answer:** (d).batch and interactive

---

6. 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).a task must be serviced by its deadline period

---

7. 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).less

---

**8.** For real time operating systems, interrupt latency should be

- a. minimal
- b. maximum
- c. zero
- d. dependent on the scheduling

**Answer:** (a).minimal

---

**9.** 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).shorter duration job has higher priority

---

**10.** 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).proportional share scheduling

**11.** 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).priority inheritance protocol

---

**12.** 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).dispatch latency

---

**13.** Time required to switch from the context of one thread to the context of another thread is known as

- a. threads fly-back time
- b. jitter
- c. context switch time
- d. none of the mentioned



**Answer:** (c).context switch time

---

**14.** 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).All of the mentioned

---

**15.** VxWorks is centered around

- a. wind microkernel
- b. linux kernel
- c. unix kernel
- d. none of the mentioned

**Answer:** (a).wind microkernel



---

**16.** The disadvantage of real addressing mode is :

- a. there is a lot of cost involved
- b. time consumption overhead
- c. absence of memory protection between processes
- d. restricted access to memory locations by processes

**Answer:** (c).absence of memory protection between processes

---

**17.** Preemptive, priority based scheduling guarantees :

- a. hard real time functionality
- b. soft real time functionality
- c. protection of memory
- d. none of the mentioned

**Answer:** (b).soft real time functionality

---



**18.** Real time systems must have :

- a. preemptive kernels
- b. non preemptive kernels
- c. preemptive kernels or non preemptive kernels
- d. neither preemptive nor non preemptive kernels

**Answer:** (a).preemptive kernels

---

**19.** Event latency is :

- a. the amount of time an event takes to occur from when the system started
- b. the amount of time from the event occurrence till the system stops
- c. the amount of time from event occurrence till the event crashes
- d. the amount of time that elapses from when an event occurs to when it is serviced.

**Answer:** (d).the amount of time that elapses from when an event occurs to when it is serviced.

---

**20.** Interrupt latency refers to the period of time :



- a. from the occurrence of an event to the arrival of an interrupt
- b. from the occurrence of an event to the servicing of an interrupt
- c. from arrival of an interrupt to the start of the interrupt service routine
- d. none of the mentioned

**Answer:** (c).from arrival of an interrupt to the start of the interrupt service routine

**21.** Real time systems need to \_\_\_\_\_ the interrupt latency.

- a. minimize
- b. maximize
- c. not bother about
- d. none of the mentioned

**Answer:** (a).minimize

---

**22.** The amount of time required for the scheduling dispatcher to stop one process and start another



- a. event latency
- b. interrupt latency
- c. dispatch latency
- d. context switch

**Answer:** (c).dispatch latency

---

**23.** The most effective technique to keep dispatch latency low is to :

- a. provide non preemptive kernels
- b. provide preemptive kernels
- c. make it user programmed
- d. run less number of processes at a time

**Answer:** (b).provide preemptive kernels

---

**24.** 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).priority inheritance protocol

---

**25.** In a real time system the computer results :

- a. must be produced withing a specific deadline period
- b. may be produced at any time
- c. may be correct
- d. all of the mentioned

**Answer:** (a).must be produced withing a specific deadline period

---

**26.** In a safety critical system, incorrect operation :

- a. does not affect much
- b. causes minor problems



- c. causes major and serious problems
- d. none of the mentioned

**Answer:** (c).causes major and serious problems

---

**27.** Antilock brake systems, flight management systems, pacemakers are examples of :

- a. safety critical system
- b. hard real time system
- c. soft real time system
- d. safety critical system and hard real time system

**Answer:** (d).safety critical system and hard real time system

---

**28.** In a \_\_\_\_\_ real time system, it is guaranteed that critical real time tasks will be completed within

- a. soft
- b. hard
- c. critical





d. none of the mentioned

**Answer:** (b).hard

---

**29.** Some of the properties of real time systems include :

- a. single purpose
- b. inexpensively mass produced
- c. small size
- d. all of the mentioned

**Answer:** (d).all of the mentioned

---

**30.** The amount of memory in a real time system is generally :

- a. less compared to PCs
- b. high compared to PCs
- c. same as in PCs
- d. they do not have any memory



**Answer:** (a).less compared to PCs

**31.** 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

**Answer:** (b).must not degrade over time

---

**32.** 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).all of the mentioned

---

**33.** The technique in which the CPU generates physical addresses directly is known as :

- a. relocation register method
- b. real addressing
- c. virtual addressing
- d. none of the mentioned

**Answer:** (b).real addressing

---

**34.** Earliest deadline first algorithm assigns priorities according to :

- a. periods
- b. deadlines
- c. burst times
- d. none of the mentioned



**Answer:** (b).deadlines

---

**35.** 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  $t_2 = 40$  :  
:

a. 0.90

b. 0.74

c. 0.94

d. 0.80

**Answer:** (c).0.94

---

**36.** Using EDF algorithm practically, it is impossible to achieve 100 percent utilization due to :

a. the cost of context switching

b. interrupt handling

c. power consumption

d. all of the mentioned

**Answer:** (a).the cost of context switching



---

37. T shares of time are allocated among all processes out of N shares in \_\_\_\_\_ scheduling algorithm.

- a. rate monotonic
- b. proportional share
- c. earliest deadline first
- d. none of the mentioned

**Answer:** (b).proportional share

---

38. If there are a total of  $T = 100$  shares to be divided among three processes, A, B and C. A is assigned 40 shares and C is assigned 20 shares. A will have \_\_\_\_\_ percent of the total processor time.

- a. 20
- b. 15
- c. 50
- d. none of the mentioned

**Answer:** (c).50

---



39. If there are a total of  $T = 100$  shares to be divided among three processes, A, B and C. A is assigned 50 shares and C is assigned 20 shares. B will have \_\_\_\_\_ percent of the total processor time.

- a. 20
- b. 15
- c. 50
- d. none of the mentioned

Answer: (b).15

---

40. If there are a total of  $T = 100$  shares to be divided among three processes, A, B and C. A is assigned 50 shares and C is assigned 20 shares. C will have \_\_\_\_\_ percent of the total processor time.

- a. 20
- b. 15
- c. 50
- d. none of the mentioned

Answer: (a).20



**41.** If there are a total of  $T = 100$  shares to be divided among three processes, A, B and C. A is assigned 30 shares and C is assigned 20 shares. If a new process D requested 30 shares, the admission control policy is:

- a. allocate 30 shares to it
- b. deny entry to D in the system
- c. all of the mentioned
- d. none of the mentioned

**Answer:** (b).deny entry to D in the system

---

**42.** To schedule the processes, they are considered \_\_\_\_\_

- a. infinitely long
- b. periodic
- c. heavy weight
- d. light weight

**Answer:** (b).periodic

---

**43.** If the period of a process is 'p', then the rate of the task is :



- a.  $p^2$
- b.  $2 \cdot p$
- c.  $1/p$
- d.  $p$

**Answer:** (c).  $1/p$

---

**44.** 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). busy wait polling

---

**45.** The \_\_\_\_\_ scheduling algorithm schedules periodic tasks using a static priority policy with

- a. earliest deadline first





- b. rate monotonic
- c. first come first served
- d. priority

**Answer:** (b).rate monotonic

---

**46.** 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).processing time of a periodic process is same for each CPU burst

---

**47.** 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).a higher priority

---

**48.** There are two processes P1 and P2, whose periods are 50 and 100 respectively. P1 is assigned processing times are  $t_1 = 20$  for P1 and  $t_2 = 35$  for P2. Is it possible to schedule these tasks so Rate monotonic scheduling ?

- a. yes
- b. no
- c. maybe
- d. none of the mentioned

**Answer:** (a).yes

---

**49.** 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).they cannot be scheduled by any other algorithm

---

**50.** Can the processes in the previous question be scheduled without missing the deadlines ?

- a. Yes
- b. No
- c. Maybe
- d. None of the mentioned

**Answer:** (b).No

**51.** Software that measures, monitors, analyzes, and controls real-world events is called:

- a. system software
- b. real-time software
- c. scientific software



d. business software

**Answer:** (b).real-time software

---

**52.** Which of the following software types is used to simplify using systems software?

- a. spreadsheet
- b. operating environment
- c. timesharing
- d. multitasking

**Answer:** (c).timesharing

---

**53.** What is the name of the operating system that reads and reacts in terms of actual time.

- a. Batch system
- b. Quick response system
- c. Real time system
- d. Time sharing system



**Answer:** (c).Real time system

---

**54.** Which of the following statements is false ?

- a. a process scheduling algorithm is preemptive if the CPU can be forcibly removed from a process
- b. time sharing systems generally use preemptive CPU scheduling
- c. response time are more predictable in preemptive systems than in non preemptive systems
- d. real time systems generally use non-preemptive CPU scheduling

**Answer:** (d).real time systems generally use non-preemptive CPU scheduling

---

**55.** Typical computer system usually includes

- a. a keyboard
- b. a screen
- c. character printer
- d. all of above



**Answer:** (d).all of above

---

**56.** System in which many computers are used by only one user to run programs is classified as

- a. single user system
- b. one time computer
- c. one task system
- d. single usage system

**Answer:** (a).single user system

**57.** Better security and easy maintenance are advantages of

- a. single user system
- b. multi user system
- c. micro time system
- d. single time system



**Answer:** (a).single user system

---

**58.** Slow processing and less storage in single user systems are its

- a. advantages
- b. disadvantages
- c. characteristics
- d. network functioning

**Answer:** (b).disadvantages

---

**59.** Fast response of real time processing is considered as its

- a. advantage
- b. disadvantage
- c. characteristic
- d. network

**Answer:** (a).advantage



---

**60.** Slower and fewer peripherals are disadvantages of

- a. mini system
- b. single time system
- c. single user system
- d. main system

**Answer:** (c).single user system

**61.** Use of robot by car manufacturing companies is an example of

- a. machine controlled computers
- b. network controlled computers
- c. applicant controlled computers
- d. user controlled computers

**Answer:** (a).machine controlled computers

---





**62.** System which processes data instructions without any delay is classified as

- a. real time system
- b. online system
- c. offline system
- d. instruction system

**Answer:** (a).real time system

---

**63.** Type of processor in which single task of a particular application is process is termed as

- a. real time processor
- b. dedicated processor
- c. applicant processor
- d. one task processor

**Answer:** (b).dedicated processor

---

**64.** Designing of system take into considerations of



- a. hardware
- b. communication system
- c. operating system
- d. all of above

**Answer:** (d).all of above

---

**65.** Consideration of storage, input and output devices are considered as requirement of

- a. hardware requirement
- b. communication requirement
- c. software requirement
- d. process requirement

**Answer:** (a).hardware requirement

---

**66.** Controlled system of pipelines and pumping stations at regular interval is an example of compu

- a. applicant controlled



- b. user controlled
- c. machine controlled
- d. network controlled

**Answer:** (d).network controlled

---

**67.** Network between computers and terminal is considered as requirement of

- a. set of software
- b. process steps
- c. hardware requirement
- d. communication network

**Answer:** (d).communication network

