**RTOS**

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
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
3. **For real time operating systems, interrupt latency should be \_\_\_\_\_\_\_\_\_\_\_\_  
   a) minimal**  
   b) maximum  
   c) zero  
   d) dependent on the scheduling
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
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
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
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
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
9. **Which one of the following is a real time operating system?**a) RTLinux  
   b) VxWorks  
   c) Windows CE  
   **d) All of the mentioned**
10. **VxWorks is centered around \_\_\_\_\_\_\_\_\_\_\_\_**  
    **a) wind microkernel**  
    b) linux kernel  
    c) unix kernel  
    d) none of the mentioned
11. **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
12. **Pre-emptive, priority based scheduling guarantees \_\_\_\_\_\_\_\_\_\_\_\_**  
    a) hard real time functionality  
    **b) soft real time functionality**  
    c) protection of memory  
    d) none of the mentioned
13. **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
14. **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.**
15. **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
16. **Real time systems need to \_\_\_\_\_\_\_\_\_\_ the interrupt latency.**  
    **a) minimize**b) maximize  
    c) not bother about  
    d) none of the mentioned
17. **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
18. **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
19. **Priority inversion is solved by use of \_\_\_\_\_\_\_\_\_\_\_\_\_  
    a) priority inheritance protocol**  
    b) two phase lock protocol  
    c) time protocol  
    d) all of the mentioned
20. **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
21. **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
22. **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**
23. **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
24. **Some of the properties of real time systems include \_\_\_\_\_\_\_\_\_\_\_\_**a) single purpose  
    b) inexpensively mass produced  
    c) small size  
    **d) all of the mentioned**
25. **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
26. **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
27. **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**
28. **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
29. **Earliest deadline first algorithm assigns priorities according to \_\_\_\_\_\_\_\_\_\_\_\_**a) periods  
    **b) deadlines**c) burst times  
    d) none of the mentioned
30. **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
31. **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 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
32. **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 two processes be scheduled using the EDF algorithm without missing their respective deadlines?  
    a) Yes**b) No  
    c) Maybe  
    d) None of the mentioned
33. **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
34. **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
35. **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
36. **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
37. **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
38. **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
39. **To schedule the processes, they are considered \_\_\_\_\_\_\_\_\_**  
    a) infinitely long  
    **b) periodic**c) heavy weight  
    d) light weight
40. **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
41. **The scheduler admits a process using \_\_\_\_\_\_\_\_\_\_**a) two phase locking protocol  
    b) admission control algorithm  
    **c) busy wait polling**d) none of the mentioned
42. **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
43. **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
44. **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
45. **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
46. **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
47. **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
48. **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
49. **\_\_\_\_\_\_\_ OS pays more attention on the meeting of the time limits.**
    1. Distributed
    2. Network
    3. **Real time**
    4. Online
50. **Real time systems are \_\_\_\_\_\_\_\_.**
51. Primarily used on mainframe computers
52. **Used for monitoring events as they occur**
53. Used for program development
54. Used for real time interactive users
55. **In \_\_\_\_\_\_ OS, the response time is very critical.**
    1. Multitasking
    2. Batch
    3. Online
    4. **Real-time**
56. **Which scheduling policy is most suitable for a time-shared operating system**
    1. Shortest-job First.
    2. Elevator.
    3. **Round-Robin.**
    4. First-Come-First-Serve.
57. **The basic types of OS are ...................**
58. batch and time sharing
59. sequential and real time
60. direct and interactive
61. **batch and interactive**
62. **In real time operating system**
63. all processes have the same priority
64. **a task must be serviced by its deadline period**
65. process scheduling can be done only once
66. kernel is not required
67. **In rate monotonic scheduling**
68. **shorter duration job has higher priority**
69. longer duration job has higher priority
70. priority does not depend on the duration of the job
71. none of the mentioned
72. **In which scheduling certain amount of CPU time is allocated to each process?**
73. earliest deadline first scheduling
74. **proportional share scheduling**
75. equal share scheduling
76. none of the mentioned
77. **Identify which of these are real-time applications scenarios:**
78. An on-line bus ticketing system
79. Printing of annual report of a company’s annual report
80. Reconciling a day’s transactions in an account book of a small company
81. **An aircrafts’ yaw control system**
82. **Identify the category of the following real-time systems as “hard, soft or firm”**
83. An on-line celebrity cricket bat auction
84. **A patient monitoring system in an ICU**
85. A library book reservation system
86. A bank’s credit card defaulters notice generation program
87. **Which of the following describes the RTOS design philiosophy best**
88. Maximize the throughput of the system
89. Maximize the processor utilization
90. **Minimizing the response time**
91. Response within certain stipulated time period
92. **Scheduling of tasks is a very important consideration in RTOS. Which of the following best described the scheduling policy design:**
93. The scheduler must follow a pre-emptive policy
94. The scheduler must not use pre-emptive policy option
95. The scheduler must not only use pre-emptive policy options with the priority considerations.
96. The scheduler must not use pre-emptive policy option, but must employ priority consideration.
97. **Keeping a task’s schedulability in mind, which way a task may be scheduled: Operating Systems/Real-time OS and Micro controllers Multiple Choice Questions**
98. The task has a predetermined time after which it may be scheduled.
99. The task has a predetermined time before which it may be scheduled
100. The task has a predetermined time interval during which it must be scheduled any time.
101. The task start has a worst case delay estimate before which it must be scheduled.
102. **Describe which of these scheduling policies is most suited for controlling a set of periodic tasks.**
103. FCFS
104. Least laxity first
105. Earliest dead line first
106. Rate monotonic policy schedule
107. **Which of the following strategy is employed for overcoming the priority inversion problem?**
108. Abandon the notion of priorities altogether
109. Have only two priority levels
110. Allow for temporarily raising the priority of lower level priority process
111. Use pre-emptive policies strictly based on priorities
112. **Is it true that, in general, in an embedded system the application tasks have higher priority than system tasks?**
113. Yes
114. No
115. **Where are the device drivers located in RTOSs with a microkernel:**
116. In the kernel space
117. In the user space
118. **In separately allocated space which is neither kernel space nor user space.**
119. **RM Schedulable upper bound for a system with 4 tasks is**
120. 0.66
121. 0.95
122. 0.44
123. **0.76**
124. **IRIS Stand for :**
125. I**ncreased Reward with Increased Service**
126. Iney Reward with Increased Service
127. Increased Raw with Increased Service
128. None of these
129. **Earliest deadline first (EDF) is a dynamic priority scheduling algorithm used in real-time operating systems to place processes in a priority queue.**
130. True
131. False
132. **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.**

1. Both 1 and 2 are necessary
2. 1 is necessary and 2 is sufficient
3. **2 is necessary and 1 is sufficient**
4. Both 1 and 2 are sufficient
5. **Consideration of storage, input and output devices are considered as requirement of**
6. **hardware requirement**
7. communication requirement
8. software requirement
9. process requirement
10. **Use of robot by the car manufacturing companies is an example of**
11. **machine controlled computers**
12. network controlled computers
13. applicant controlled computers
14. user controlled computers
15. **Designing of system take into considerations of**
16. hardware
17. communication system
18. operating system
19. **all of above**
20. **Slack time**
21. **is the amount of time left after a job if the job was started now.**
22. is the amount of time left before a job if the job was started now.
23. is the amount of time left from a job if the job was started now.
24. is the amount of time left required by a job if the job was started now.
25. **The priority of a real time task :**
26. must degrade over time
27. **must not degrade over time**
28. may degrade over time
29. none of the mentioned
30. **Delay and Jitter :**
31. mean the same thing
32. **are two completely different things**
33. all of the mentioned
34. none of the mentioned
35. **if jobs have unpredictable release times, a task is termed :**
36. **aperiodic**
37. sporadic
38. periodic.
39. None of these
40. **A hard real-time system is one in which ...**
41. Failure to meet a single deadline may lead to complete and catastrophic system failure.
42. Missing more than a few may lead to complete and catastrophic system failure.
43. Performance is degraded but not destroyed by failure to meet response-time constraints.
44. None of the above
45. **A hard real-time system is one in which ...**
46. Failure to meet a single deadline may lead to complete and catastrophic system failure.
47. Missing more than a few may lead to complete and catastrophic system failure.
48. Performance is degraded but not destroyed by failure to meet response-time constraints.
49. None of the above
50. **Which of the following is/are synchronous aperiodic event ...**
51. Garbage collection
52. Externally generated exception
53. Cyclic code
54. Branch instruction
55. **Which of the following is/are asynchronous periodic event ...**
56. Typical branch instruction
57. Regular, but not fixed-period interrupt
58. Clock-generated interrupt
59. Traps
60. **Which of the following pair of CPU utilization % and Zone type is/are correct ...**
61. 83–99, questionable
62. 70–82, dangerous
63. 26–50, very safe
64. None of the above
65. **Disciplines that impact on real-time systems engineering is/are...**
66. Control Theory
67. Operations Research
68. Both a and c
69. None of the above
70. **Which of following regarding RTOS is correct/ not misconception...**
71. The study of real-time systems is mostly about scheduling theory.
72. There are no universal, widely accepted methodologies for real-time systems specification and design.
73. Rate-monotonic analysis has solved “the real-time problem.
74. None of the above
75. **Overall system utilization U= ...**
76. i
77. i/pi
78. Both a and c
79. None of the above
80. **A system is said to be time-overloaded if...**
81. U ≥ 100%
82. U ≤100%
83. U < 100%
84. U> 100%
85. **Which of the following statement is true?**
86. Any occurrence that causes the program counter to change non-sequentially is considered a change of flow-of-control
87. The release time is the time at which an instance of a scheduled task is ready to run, and is generally associated with an interrupt
88. Both a and c
89. None of the above
90. **Which of the following represent a possible change in flow-of-control?**
91. Invocation of procedures in C
92. Instantiation of an object
93. If-then, goto, and case statements
94. All of the above
95. **The (CPU) utilization or time-loading factor, U, is a ...**
96. Measure of the percentage of idle processing
97. Measure of the percentage of non-idle processing
98. Both a and b
99. None of the above
100. **Which of the following is example of RTOS?**
101. Inertial measurement system for an aircraft
102. System used to control a set of traffic lights at a four-way traffic intersection
103. System that controls all aspects of the bottling of jars of pasta sauce
104. All of the above
105. **Many real-time systems utilize time-stamping and global clocks for...**
106. Synchronization
107. Task initiation
108. Data marking
109. All of the above
110. **Real-time systems are often ...**
111. Reactive systems
112. Embedded systems
113. Data marking
114. a and b
115. **Which of the following is/are system wide bus?**
116. Power
117. Address
118. Data
119. All of the above
120. **In signaling between devices is it is important to have a mechanism for “recording” the appearance of that signal for later processing. This process is called ...**
121. Latching
122. Tristate logic
123. Triggering
124. None of the above
125. **FireWire technology was originally developed by...**
126. Microsoft
127. Apple
128. Google
129. None of the above
130. **Using EDF algorithm practically, it is impossible to achieve 100 percent utilization due to**
131. the cost of context switching
132. interrupt handling
133. power consumption
134. all of the mentioned
135. **There are generally …… kinds of instructions.**
136. 5
137. 4
138. 7
139. 6
140. **In rate monotonic scheduling, a process with a shorter period is assigned**
141. a higher priority
142. a lower priority
143. higher & lower priority
144. none of the mentioned
145. **A single 1394 port can be used to connect up External devices.**
146. 58
147. 64
148. 62
149. 63
150. **The CISC is based on which of the following principle.**
151. Complexity handled by the compiler and software
152. Instructions executed directly by hardware
153. There are multiple instructions and addressing modes
154. Highly pipelined design
155. **Which of the following require special data-movement instructions**
156. Memory-Mapped Input/Output
157. Programmed Input/Output
158. Direct Memory Access
159. None of the above
160. **Upon receipt of the interrupt signal, the contents of the program counter are saved to a designated memory location called the…**
161. Status register
162. Interrupt-handler location
163. Interrupt return location
164. None of the above
165. **The interrupt vector contains the…**
166. Bit map of all pending interrupts
167. Value of the lowest interrupt that will currently be honored
168. Identity of the highest-priority interrupt request
169. None of the above
170. **Intel 82093AA I/O Advanced Programmable Interrupt Controller supports …… programmable interrupts**
171. 24
172. 32
173. 16
174. None of the above
175. **Interrupt register contains...**
176. Identity of the highest-priority interrupt request
177. Bit map of all pending (latched) interrupts
178. Value of the lowest interrupt that will currently be honored
179. None of the above
180. **Every real-time system has a set of timing constraints, timing constraints can be broken down into \_\_\_\_\_\_ categories.**
181. 1
182. 2
183. 3
184. 4
185. **Watchdog timers are used to ensure that...**
186. CPU continues to function
187. Task initiation
188. Certain devices are serviced at regular intervals
189. Both a and c
190. **The entry of all the PCBs of the current processes is in**
191. Process Register
192. Program Counter
193. Process Table
194. Process Unit