**RTS PRACTICE QUESTION BANK**

*Note:- Attempt all questions.*

*Highlighted option is the answer of the questions.*

*Attempt it very carefully.*

*FEEL FREE TO DISCUSS ANY QUESTION.*

*Marks: 150*

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|  | 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 |
|  | Real-time operating system (RTOS) is an operating system-  A intended to serve real time application that process data as it comes in, mostly without buffer delay.  B Processing time requirement are calculated in tenths of seconds increments of time.  C time-bound system that can be defined as fixed time constraints.  **D** All |
|  | Match the components of RTOS with their functioning-  **Component Functioning**  1.Scheduler I. tells the order of task execution.  2.Symmetric Multiprocessing II. number of multiple different tasks that can be handled by RTOS  3.Function Library III. acts as an interface that helps to connect kernel and application code  4.Memory Management IV. to allocate memory to every program  **A** 1-I, 2-II, 3-III, 4-IV  B 1-I, 2-III,3-IV,4-II  C 1-IV,2-III,3-II,4-I  D 1-II,2-IV, 3-I, 4-III |
|  | For real time operating systems, interrupt latency should be \_\_\_\_\_\_\_\_\_\_\_\_  **a)** minimal  b) maximum  c) zero  d) dependent on the scheduling |
|  | Match types of RTOS with example-  **Types Example**   1. Hard RTOS X. Multimedia applications 2. Soft RTOS Y. Medical critical care system, Aircraft systems 3. Firm RTOS Z. Online Transaction system and Livestock price quotation System   A 1-X, 2-Y, 3-Z  B 1-Z, 2-Y, 3-X  C 1-Y, 2-X, 3-Z  **D** 1-Y, 2-Z, 3-X |
|  | Following are the components of a digital control-  A Sensor, actuator, plant,  **B** Sensor, actuator, plant, controller  C Sensor, actuator, environment  D Sensor, actuator, environment, controller |
|  | Which [scheduling](https://t4tutorials.com/cpu-scheduling-solved-mcqs-questions-answers/) 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 |
|  | Multirate Systems is-  A a plant typically has more than one degree of freedom.  B monitored by multiple sensors and controlled by multiple actuators.  C multivariate (i.e., multi-input/multi-output) controller  **D** All |
|  | A system samples and reads each temperature sensor every 200 msec. Suppose the system begins the first control-law computation at time 20 msec. The release time of the job Jk will be-  A 220  B 20  **C** 200+k\*20 msec.  D 20 + k × 200 msec. |
|  | 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 |
|  | A reference model of real-time systems is characterized by three elements:  **A** workload model, resource model, algorithm  B processor, resources, algorithm  C processor, resources, workload model  D workload model, resource model, processor |
|  | Which one is false-  A temporal parameters tell us its timing constraints and behavior.  B functional parameters specify the intrinsic properties of the job.  C resource parameters give us its resource requirements  **D** interconnection parameters describe resource interconnection. |
|  | 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 |
|  | Match the following:  **Types of task Properties**  1. Periodic A. If jobs have unpredictable release times.  2. Aperiodic B. If jobs have predictable release times and deadline.  3. Sporadic C. If jobs have unpredictable release times and deadline.  **A** 1-A, 2-B, 3-C  B 1-B, 2-A, 3-C  C 1-C, 2-B, 3-C  D 1-B, 2-C, 3-A |
|  | Only one of all the immediate successors of a job whose outgoing edges express OR constraints is to be executed. Such a job is called  A Join job  B Branch job  C Conditional job  **D** Pipelined job |
|  | Which is not true about the properties of clock driven scheduling-  A It is used to make the decision about which job to execute as specific time instants.  B It is used in the hard real time jobs where all parameters are known and fixed.  C A schedule of jobs is computed offline and is stored for use at run time.  **D** It is commonly used for scheduling the time shared applications. |
|  | . .................is another classification of Kernel. user services and kernel services are implemented under same address space  A. Microkernel  **B. Monolithic Kernel**  C. Both  D. None |
|  | Which is not true about the properties of clock driven scheduling-  A It is commonly used for scheduling the time shared applications.  **B** It is also called time driven scheduling.  C It is also called processor sharing algorithm.  D Every jobs join FIFO queue when it becomes ready for execution |
|  | Which is true about the properties of priority driven scheduling-  A It assigns priority to jobs based on some algorithms and makes scheduling decision based on the priorities.  B the jobs are placed in one or more queues and at each event the ready job with highest priority is executed.  **C** All  D It is also called event-driven scheduling. |
|  | 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 |
|  | If jobs are scheduled on multiple processors, and a job can be dispatched from priority run queue to any of the processors, the system is-  A Static  B Migrated  **C** Dynamic  D Can not defined the system. |
|  | Consider two processes P1 and P2. The period of P1 is 50, and processing time of P1 is 25. The period of P2 is 75 and the processing time of P2 is 30. Schedule these processes according to EDF (Earliest Deadline First). From which process you will start, and which one is next-  A P2 P1  **B** P1 P2  C P1 P1  D P2 P2 |
|  | 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 |
|  | LST (Least Slack Time) uses the slack of job for priorities to schedule them. What is slack-  **A** Difference between deadline, Cycle Start Time and Remaining Execution Time of the task  B Difference between deadline, End Time and Remaining Execution Time of the task  C Difference between Cycle Start Time and Remaining Execution Time of the task  D Difference between deadline and Remaining Execution Time of the task |
|  | With the help of RMA( Rate Monotonic Algorithm) it is possible to-  A Select the best task priority allocation.  B Select the best scheduling protocol  C Select the best implementation scheme for aperiodic reality  **D** All |
|  | 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 |
|  | Consider the following data for RMS (Rate Monotonic Scheduling)-  Processes Execution Time (C) Time period (T)  P1 3 20  P2 2 5  P3 2 10  What is the schedule time and priorities of the processes-  **A** 20 and P2>P3>P1  B 10 and P2>P3>P1  C 20 and P1>P2>P3  D 10 and P1>P2>P3 |
|  | Which is not true-  A Release time of a job is the time at which job becomes ready for execution.  B Execution time of a job is the time taken by job to finish its execution.  C Deadline of a job is the time by which a job should finish its execution.  **D** Maximum allowable response time of a job is called its relative response time. |
|  | 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 |
|  | A periodic task is denoted by followings:   1. Φi – is the phase of the task. 2. Pi – is the period of the task. 3. ei – is the execution time of the task. 4. Di – is the relative deadline of the task.   Which one is correct to define a task-  A 1,2&3  B 1,2&4  C 1,3 &4  **D** 1,2,3,4 |
|  | Following(s) is / are the effect of resource contention and resource access control-  A Priority Inversion  B Timing Anomalies  C Deadlock  **D** All |
|  | 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 |
|  | Which is the basic rule of basic priority Inheritance protocol-  A the higher-priority job inherits the priority of the lower priority job and job executes at its inherited priority.  **B** the lower-priority job inherits the priority of the higher priority job and job executes at its inherited priority.  C All the jobs have fixed priorities.  D The priorities are known aprior and fixed. |
|  | The …………..of the priority inheritance protocol is resolved in the priority ceiling protocol.  A Priority ceil problem  B Priority Inheritance problem  **C** chained blocking problem  D Deadlock problem |
|  | 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 |
|  | The priority ceilingof any resource R is -  A The current priority of all the jobs that require R.  B The inherited priority of all the jobs that require R.  **C** The highest priority of all the jobs that require R.  D The lowest priority of all the jobs that require R. |
|  | Which is true about preemption ceiling protocol-   1. It makes decisions on whether to grant a free resource to any job based on the preemption level of the job   B It assumes that the resource requirements of all the jobs are known a prior  C After assigning preemption levels to all the jobs, determine the preemption ceiling of each resource  **D** All |
|  | Which one of the following is a real time operating system?  a) RTLinux  b) VxWorks  c) Windows CE  **d)** All of the mentioned |
|  | The preemption ceilings of resources that have multiple units can be defined as:  A The preemption ceiling ψ(Ri, k) of the resource Ri when k units of Ri are free.  B It is the highest preemption level of all the jobs that require more than k units of Ri .  **C** Both  D Only A |
|  | A sequence of reads and writes by a set of jobs is serializable-  **A** if the effect produced by the sequence on all the data objects shared by the jobs is the same as the effect produced by a serial sequence.  B No effect on the sequence of read and write.  C if the effect produced by the sequence on all the data objects shared by the jobs is the different as the effect produced by a serial sequence.  D None |
|  | 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 |
|  | Serially reusable resources are typically granted to jobs on a nonpreemptive basis and used in a  A Non mutual exclusion manner.  **B** Mutual exclusion manner.  C Both  D None |
|  | A resource access-control protocol, or simply an access-control protocol, is a set of rules that govern  A when and under what conditions each request for resource is granted  B how jobs requiring resources are scheduled  **C** Both  D Only A |
|  | VxWorks is centered around\_\_\_\_\_\_\_\_\_\_\_\_  **a)** wind microkernel  b) linux kernel  c) unix kernel  d) none of the mentioned |
|  | Priority inversioncan occur when-  **A** A higher-priority job can be blocked by a lower-priority job if the jobs conflict  B A lower-priority job can be blocked by a higher-priority job if the jobs conflict  C The execution time of the critical section in Job is shortened.  D Resource allocation can also lead to deadlocks. |
|  | The network interface of each host contains an input queue and an output queue. These queues are maintained by local servers-  A Transport Protocol (TP) Handler  B Network Access Control (NAC) Handler  **C** Both  D None |
|  | both time dimensions are required, in which case the database is called  **A**. Temporal database  B. Bitemporal database  C. User database  D. database |
|  | Match the followings: -  **Parameter Function**  1.Throughput X. numbers of packets or message stream that the network can deliver per unit Time  2.Delay Y. time taken to deliver the packet or message stream  3.Jitter Z. variance on delay  A 1-Z, 2-Y, 3-X  **B** 1-X, 2-Y, 3-Z  C 1-Y, 2-X, 3-Z  D 1-X, 2-Z, 3-Y |
|  | Service disciplines are divided into following categories-  **A** rate allocating and rate controlled  B rate allocating and rate monitored  C rate monitored and rate controlled  D rate allocating, rate controlled and rate monitored |
|  | Real time POSIX is called:   1. POSIX 1 : system interfaces and system call parameters 2. POSIX 2 : shells and utilities 3. POSIX 3 : test methods for verifying conformance to POSIX 4. **POSIX 4 : real-time extensions** |
|  | In weighted fair queueing (WFQ) algorithm, the output buffer comprises of two queues as-  A FIFO and LIFO  B FIFO and Priority  C Priority and SFN  **D** FIFO and SFN |
|  | Weighted Round Robin (WRR) is better than-  A Time driven scheme as it does not require globally synchronized clocks.  B Priority driven scheme because as it does not require any sorted queue.  **C** Both  D None |
|  | Watchdog timers are used to ensure that...   1. CPU continues to function 2. Task initiation 3. Certain devices are serviced at regular intervals 4. **Both a and c** |
|  | In weighted round robin scheduling-  A Jobs are placed in a FIFO queue.  B A job with weight wti executes for wti time slices each round  C Length of the round equals wti  **D** All |
|  | ……are used to connect components of embedded controller.  A LAN (Local Area Network)  **B** CAN (Controller Area Network)  C MAN (Metropolitan Area Network)  D PAN (Personal Area Network) |
|  | Using EDF algorithm practically, it is impossible to achieve 100 percent utilization due to \_\_\_\_\_\_\_\_\_\_.   * 1. the cost of context switching   2. interrupt handling   3. power consumption   4. **all of the mentioned** |
|  | Which is about Prioritized access in token ring-  A. Prioritized access is made possible by using the two groups of 3 bits each in AC field.  B. Their value represents the token priority and reservation priority.  **C** All  D A station can seize the free token only when its outgoing packet has an equal or higher priority than the token priority. |
|  | The prioritized MAC method in IEEE 802.4 and FDDI standards is called-  **A** Timed token MAC method  B Polling  C CSMA/CD  D tokened MAC method |
|  | Which of the following statement is true?   * 1. Any occurrence that causes the program counter to change non-sequentially is considered a change of flow-of-control   2. 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   3. **Both a and c**   4. None of the above |
|  | Which is not true for RSVP-  A RSVP is concerned only with resource reservation.  B RSVP is receiver initiated.  C RSVP is simplex.  **D** RSVP is static. |
|  | Types of messages used in RSVP connection establishment-  **A** Resv & Path  B Flowspec & Filterspec  C Both  D None |
|  | Using EDF algorithm practically, it is impossible to achieve 100 percent utilization due to \_\_\_\_\_\_\_\_\_\_.   * 1. the cost of context switching   2. interrupt handling   3. **power consumption**   4. all of the mentioned |
|  | Databases that store information about states of the real world across time are called  A bitemporal database  B user-defined database  **C** temporal databases  D transaction time Database |
|  | In rate monotonic scheduling, a process with a shorter period is assigned \_\_\_\_\_\_\_\_\_\_   * 1. **a higher priority**   2. a lower priority   3. higher & lower priority   4. none of the mentioned |
|  | In some applications only one of the dimensions is needed and in other cases both time dimensions are required-  **A** bitemporal database  B user-defined database  C temporal databases  D transaction time Database |
|  | Examples of temporal database is/are:  A Insurance  B Reservation systems  C Scientific databases  **D** All |
|  | In ........................ the user services and kernel services are implemented in different address space.  A. **Microkernel**  B. Monolithic kernel  C. Both  D. none |
|  | POSIX stands for-  **A** Portable Operating System Interface  B Portable Operating System Interconnection  C Portable Operating System Interface X  D Programming Operating System Interface |
|  | PURPOSE OF CONCURRENCY CONTROL-  A To enforce Isolation (through mutual exclusion) among conflicting transactions.  B To preserve database consistency through consistency preserving execution of transactions.  C To resolve read-write and write-write conflicts.  **D** All |
|  | .................is another classification of Kernel. user services and kernel services are implemented under same address space  A. Microkernel  B. **Monolithic Kernel**  C. Both  D. None |
|  | Execution of transaction Ti is done in following phases.  A Read and execution phase  B Validation phase  C Write phase  **D** All |
|  | Simultaneous execution of transactions over a shared database can create several data integrity and consistency problems:   1. Lost Updates 2. Uncommitted Data 3. Inconsistent retrievals   A 1 & 2  B 1 & 3  C 2 & 3  **D** 1,2 & 3 |
|  | Which single task of a particular application is process is a type of processor… A. applicant processor B. one task processor C. [real time](https://t4tutorials.com/real-time-operating-systems-hard-vs-soft-rtos) processor D. **dedicated processor** |
|  | Following is/are the approach(es) to implement RTOS:   1. Microkernel Approach 2. Monolithic Approach 3. Decoupled Approach   **A** 1, 2 & 3  B 1 & 2  C 1 & 3  D 2 & 3 |
|  | An example of a commercial real time database is-  **A** eXtremeDB  B mangoDB  C Oracle  D realDB |

**BEST OF LUCK FOR YOUR EXAMS**