Online Examinations (Even Sem/Part-I/Part-II Examinations 2020 - 2021)

Course Name - –Real Time OS
Course Code - MCA601A

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Answer all the questions. Each question carry one mark.

9.   1.In real time operating system _____

Mark only one oval.

( ) All procesa task must be serviced by its deadline period

( ) a task must be serviced by its deadline period

( ) process scheduling can be done only once

( ) kernel is not required

10. 2.For real time operating systems, interrupt latency should be _____

Mark only one oval.

○ minimum

○ maximum

○ zero

○ dependent on the scheduling

11. 3.In which scheduling certain amount of CPU time is allocated to each process?

Mark only one oval.

○ earliest deadline first scheduling

○ proportional share scheduling

○ equal share scheduling

○ None of these

12. 4.Time duration required for scheduling dispatcher to stop one process and start another is known as _____

Mark only one oval.

○ process latency

○ dispatch latency

○ execution latency

○ interrupt latency

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

Mark only one oval.

⬭ RTLinux

⬭ VxWorks

⬭ Windows CE

⬭ All of these

14.   6.IRIS Stands

Mark only one oval.

⬭ Iney Reward with Increased Service

⬭ Increased Raw with Increased Service

⬭ Increased Reward with Increased Service

⬭ none of these

15.   7.RM Schedulable upper bound for a system with 4 tasks is

Mark only one oval.

⬭ 0.66

⬭ 0.76

⬭ 0.95

⬭ 0.44

16. 8.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

Mark only one oval.

○ Both 1 and 2 are necessary

○ 1 is necessary and 2 is sufficient

○ 2 is necessary and 1 is sufficient

○ Both 1 and 2 are sufficient

17. 9.Which of the following describes the RTOS design philosophy best?

Mark only one oval.

○ Maximize the throughput of the system

○ Maximize the processor utilization

○ Minimizing the response time

○ Response within certain stipulated time period

18. 10.Designing of system take into considerations of

Mark only one oval.

○ hardware

○ communication system

○ operating system

○ all of these

19. 11.What is an atomic action?

Mark only one oval.

○ A sequence of instructions to be executed without any interruption

○ A sequence of instructions can be interrupted during the execution

○ It is a synonym of the single threaded process

○ None of these

20. 12.Which statements are true for a thread and a process? i) Both execute a series of instructions. ii) A process is easy to create while thread requires duplication of the parent thread. iii) Communication between processes requires IPC. However, communication between threads in the same process does not require any IPC. iv) Processes are independent, while threads are dependent.

Mark only one oval.

○ Only i & ii

○ Only iii & iv

○ Only i, iii and iv

○ All of these

21. 13.What is NOT true for a system call?

Mark only one oval.

○ System calls are an interface to contact with the kernel.

○ A program has to wait until a system call finishes its work

○ System call generates software interrupt for the kernel

○ Kernel module needs the system call to interact with other kernel modules.

22.   14.Among the following techniques, which does provide a solution for a critical section problem?

Mark only one oval.

⬭ Shared memory

⬭ Mutex

⬭ Pipe

⬭ Queue

23.   15.Find out the correct statement(s) from the followings. i) Operating System is an example of a system program. ii) Call by reference is available in the C programming language. iii) Media codecs are kernel space programs. iv) The red-black tree is a type of self-balancing binary search tree

Mark only one oval.

⬭ Only i & iii

⬭ Only ii & iv

⬭ Only ii & iii

⬭ Only i & iv

24.   16.Which of the following is true for round robin scheduling?

Mark only one oval.

⬭ Pre-emptive scheduling

⬭ non pre-emptive scheduling

⬭ optimal scheduling

⬭ priority based scheduling

25.   17.The interval of time denoted by the time of submission of a process and the time of completion of that process is termed as

Mark only one oval.

⃝ execution time

⃝ turnaround time

⃝ response time

⃝ throughput

26.   18.Given, a process is performing I/O which of the following state it must enter

Mark only one oval.

⃝ ready state

⃝ running state

⃝ block state

⃝ terminating state

27.   19.Which of the following statement is true?

Mark only one oval.

⃝ In a nuclear reactor control system, the request from a human operator for a report of various system parameters can be considered as a sporadic task

⃝ The phase of a periodic task indicates the time of separation between the start of two consecutive instances of the task

⃝ A cyclic scheduler is an example of an event-driven schedule

⃝ Not all hard real-time systems are safety-critical in nature

28. 20.Which of the following statement is/are false? i) The objective of any good real-time task scheduling algorithm is to minimize the average response times of the tasks. ii) The goal of any good real-time operating system to complete every hard real-time task as ahead of its deadline as possible.

Mark only one oval.

⬭ Only i

⬭ Only ii

⬭ Both i and ii

⬭ None of these

29. 21.Which of the following statement is/are false? i) For a non-preemptive operating system, RMA is an optimal static priority scheduling algorithm for a set of periodic real-time tasks. ii) While scheduling a set of hard real-time periodic tasks using a cyclic scheduler, if more than one frame satisfies all the constraints on frame size then the largest of these frame sizes should be chosen.

Mark only one oval.

⬭ Only (i) is true

⬭ Only (ii) is true

⬭ Both are true

⬭ Both are false

30. 22.Delay and Jitter :

Mark only one oval.

⬭ mean the same thing

⬭ are two completely different things

⬭ All of these

⬭ None of these

31.   23.The major difference between a multimedia file and a regular file is :

Mark only one oval.

⬭ the size

⬭ the attributes

⬭ the ownership

⬭ the rate at which the file must be accessed

32.   24.System which processes the data instructions without any delay is classified as

Mark only one oval.

⬭ online system

⬭ offline system

⬭ instruction system

⬭ None of these

33.   25.Preemptive, priority-based scheduling guarantees :

Mark only one oval.

⬭ hard real time functionality

⬭ soft real time functionality

⬭ protection of memory

⬭ None of these

34. 26.Real time systems must have :

Mark only one oval.

◯ preemptive kernels

◯ non preemptive kernels

◯ preemptive kernels or non-preemptive kernels

◯ neither preemptive nor non preemptive kernels

35. 27.Hard real-time system is a

Mark only one oval.

◯ system with deadline is very Hard

◯ system with stringent deadlines

◯ system whose deadline is very hard to determine

◯ System whose deadline is not so hard to determine

36. 28.Identify which of these are real-time applications scenarios:

Mark only one oval.

◯ An on-line bus ticketing system

◯ Printing of a company's annual report

◯ Reconciling a day's transactions in an account book of a small company

◯ An aircraft's yaw control system

37. 29.Slack time

Mark only one oval.

○ is the amount of time left after a job if the job was started now.

○ is the amount of time left before a job if the job was started now.

○ is the amount of time left from a job if the job was started now.

○ is the amount of time left required by a job if the job was started now

38. 30.Hard real time operating system has ___ jitter than a soft real time operating system

Mark only one oval.

○ More

○ Equal

○ Less

○ None

39. 31.For real time operating systems, interrupt latency should be

Mark only one oval.

○ Dependent on the scheduling

○ Zero

○ Maximum

○ Minimum

40. 32.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

Mark only one oval.

◯ Both 1 and 2 are necessary

◯ 1 is necessary and 2 is sufficient

◯ 2 is necessary and 1 is sufficient

◯ Both 1 and 2 are sufficient

41. 33.Soft real time operating system has ___ jitter than a Hard real time operating system

Mark only one oval.

◯ More

◯ Less

◯ Same

◯ Situation dependent

42. 34.What are the Real-time systems?

Mark only one oval.

◯ Used for monitoring events as they occur

◯ Primarily used on mainframe computers

◯ Used for real-time interactive users

◯ Used for program development

43.   35.Which of the following is Preemptive, priority–based scheduling guarantees?

Mark only one oval.

○ protection of memory

○ hard real-time functionality

○ soft real-time functionality

○ all of these

44.   36.Keeping a task's schedulable in mind, which way a task may be scheduled

Mark only one oval.

○ The task has a predetermined time after which it may be scheduled

○ The task has a predetermined time before which it may be scheduled

○ The task has a predetermined time interval during which it must be scheduled any
   time.

○ The task start has a worst-case delay estimate before which it must be scheduled.

45.   37.Which of the following strategy is employed for overcoming the priority
       inversion problem?

Mark only one oval.

○ Abandon the notion of pHave only two priority levels

○ Have only two priority levels

○ Allow for temporarily raising the priority of lower level priority process

○ Use pre-emptive policies strictly based on priorities

46.   38.Where are the device drivers located in RTOSs with a microkernel?

Mark only one oval.

◯ In the kernel space

◯ In the user space

◯ In separately allocated space which is neither kernel space nor user space.

◯ None of these

47.   39.In priority scheduling algorithm, when a process arrives at the ready queue, its priority is compared with the priority of

Mark only one oval.

◯ all process

◯ currently running process

◯ parent process

◯ init process

48.   40.What is inter process communication?

Mark only one oval.

◯ communication within the process

◯ communication between two process

◯ communication between two threads of same process

◯ None of these

49.   41.The processes that are residing in main memory and are ready and waiting to
       execute are kept on a list called

Mark only one oval.

⬭ job queue

⬭ ready queue

⬭ execution queue

⬭ process queue

50.   42.In Unix, Which system call creates the new process?

Mark only one oval.

⬭ fork

⬭ create

⬭ new

⬭ None of these

51.   43.A thread is a

Mark only one oval.

⬭ task

⬭ program

⬭ process

⬭ lightweight process

52.   44.Which system call returns the process identifier of a terminated child?

Mark only one oval.

◯ wait

◯ exit

◯ fork

◯ get

53.   45.In general, each process is identified by its _____

Mark only one oval.

◯ Process Control Block

◯ Device Queue

◯ Process Identifier

◯ None of these

54.   46.What is an interrupt vector?

Mark only one oval.

◯ It is an address that is indexed to an interrupt handler

◯ heap sortIt is a unique device number that is indexed by an address

◯ It is a unique identity given to an interrupt

◯ None of these

55.   47.Which operation is performed by an interrupt handler?

Mark only one oval.

◯ Saving the current state of the system

◯ Loading the interrupt handling code and executing it

◯ Once done handling, bringing back the system to the original state it was before the interrupt occurred

◯ all of these

56.   48.Which module gives control of the CPU to the process selected by the short-term scheduler?

Mark only one oval.

◯ dispatcher

◯ interrupt

◯ scheduler

◯ None of these

57.   49.Which one of the following can NOT be scheduled by the kernel?

Mark only one oval.

◯ kernel level thread

◯ user level thread

◯ process

◯ None of these

58.　50.Transient operating system code is code that

Mark only one oval.

○ is not easily accessible

○ comes and goes as needed

○ stays in the memory always

○ never enters the memory space

59.　51.Which of the following two operations are provided by the IPC facility?

Mark only one oval.

○ write & delete message

○ delete & receive message

○ send & delete message

○ receive & send message

60.　52.What is a trap/exception?

Mark only one oval.

○ hardware generated interrupt caused by an error

○ software generated interrupt caused by an error

○ user generated interrupt caused by an error

○ none of these

61.   53.Which of the following options is correct? i) RMA (Rate Monotonic Algorithm) is optimal for scheduling access of several hard real-time periodic tasks to a certain shared critical resource. ii) DMA (Deadline Monotonic Algorithm) may produce a feasible schedule even when RMA fails to produce a feasible schedule.

Mark only one oval.

⬭ (i) is true

⬭ (ii) is true

⬭ Both are true

⬭ Both are false

62.   54.Which of the following options is correct? i) In Unix operating system, the priority of computation-bound tasks gravitates to lower priority values. ii) Under PCP (Priority Ceiling Protocol), the highest priority task does not suffer any inversions when sharing certain critical resources.

Mark only one oval.

⬭ (i) is true

⬭ (ii) is true

⬭ Both are true

⬭ Both are false

63.   55.Which of the following options is correct? i) RTOS can handle nested interrupt. ii) RTOS supports semaphore.

Mark only one oval.

⬭ (i) is true

⬭ (ii) is true

⬭ Both are true

⬭ Both are false

64.   56.What happens to the interrupts in an interrupt service routine?

Mark only one oval.

( ) disable interrupt

( ) enable interrupts

( ) remains unchanged

( ) ready state

65.   57.Firm RTOS is a type of

Mark only one oval.

( ) Soft RTOS

( ) Hard RTOS

( ) Combination of Soft RTOS and Hard RTOS

( ) none of these

66.   58.Which of the following is NOT correct for RMS scheduling?

Mark only one oval.

( ) It is a fixed priority algorithm

( ) Priority is assigned based on Arrival

( ) Shorter period job has higher priority

( ) It supports preemption

67.   59.Which of the following is NOT correct for Micro-controller?

Mark only one oval.

⬭ It has it's own memory

⬭ It has it's own I/O

⬭ Designed for specific purpose

⬭ High processing power

68.   60.A task T(2, 0.9) in EDF scheduling represents i) Deadline is 2 ii) Execution time
       0.9

Mark only one oval.

⬭ Only (i) is true

⬭ Only (ii) is true

⬭ Both are true

⬭ Both are false

69.   61.The Hyper-period of a periodic task is

Mark only one oval.

⬭ The average of all the periods

⬭ The LCM of all the periods

⬭ The HCF of all the periods

⬭ The maximum of all the periods

70. 62.Concurrent access to shared data may result in

Mark only one oval.

- ◯ data consistency
- ◯ data insecurity
- ◯ data inconsistency
- ◯ none of these

71. 63.The address of the next instruction to be executed by the current process is provided by the

Mark only one oval.

- ◯ CPU registers
- ◯ Program counter
- ◯ Process stack
- ◯ Pipe

72. 64.The child process can _____

Mark only one oval.

- ◯ be a duplicate of the parent process
- ◯ never be a duplicate of the parent process
- ◯ cannot have another program loaded into it
- ◯ never have another program loaded into it

73.   65.Bounded capacity and Unbounded capacity queues are referred to as _____

Mark only one oval.

⬭ Programmed buffering

⬭ Automatic buffering

⬭ No buffering

⬭ User defined buffering

74.   66.What is FIFO algorithm?

Mark only one oval.

⬭ first executes the job that came in last in the queue

⬭ first executes the job that needs minimal processor

⬭ first executes the job that came in first in the queue

⬭ first executes the job that has maximum processor needs

75.   67.Which of the following algorithms tends to minimize the process flow time?

Mark only one oval.

⬭ First come First served

⬭ Shortest Job First

⬭ Earliest Deadline First

⬭ Longest Job First

76. 68.Which of the following concurrency control protocols ensure both conflict serializability and freedom from deadlock? I) 2-phase locking II) Timestamp ordering

Mark only one oval.

- ◯ I only
- ◯ II only
- ◯ Both I and II
- ◯ Either I or II

77. 69.The segment of code in which the process may change common variables, update tables, write into files is known as_____

Mark only one oval.

- ◯ program
- ◯ critical section
- ◯ non – critical section
- ◯ synchronizing

78. 70.A parent process calling _____ system call will be suspended until children processes terminate.

Mark only one oval.

- ◯ wait
- ◯ fork
- ◯ exit
- ◯ exec

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