Shivaji University, Kolhapur

Question Bank for Mar 2022 (Summer) Examination

Subject Code: 79142 **Subject Name** : Operating System I

Objective Questions

1. To access the services of the operating system, the interface is provided by the _____

A. Library
B. System calls
C. Assembly instructions
D. API

2. What is an operating system?

A. Interface between the hardware and application programs
B. Collection of programs that manages hardware resources
C. System service provider to the application programs
D. All of the mentioned

3. In a timeshare operating system, when the time slot assigned to a process is completed, the process switches from the current state to?

A. Suspended state
B. Terminated state
C. Ready state
D. Blocked state

4. The operating system is responsible for?

A. Bad-block recovery
B. Booting from disk
C. Disk initialization
D. All of the mentioned

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

A. zero
B. minimal

C. maximum
D. dependent on the scheduling

6. Swapping _____ be done when a process has pending I/O, or has to execute I/O operations only into operating system buffers.

A. must never
B. maybe
C. can
D. Must

7. Operating system is a collection of_____
A. Software routines
B. Input-output devices
C. Hardware components
D. All of these

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

A. Real time system
B. Time sharing system
C. Quick response system
D. Batch system

9. Which one of the following errors will be handle by the operating system?

A. power failure
B. lack of paper in printer
C. connection failure in the network
D. all of the mentioned

10. For real time operating systems, interrupt latency should be_____

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

11. An operating system that can do multitasking means that_____
A. The OS can divide up work between several CPUs.
B. Several programs can be operated concurrently
C. Multiple people can use the computer concurrently

D. All of the above

12. Operating system is resident in memory of which part?
A. Middle
B. Lower
C. Upper
D. All of these

13. Which of the following is not an operating system?
A. Windows
B. Linux
C. Oracle
D. DOS

14. Thread is a
A. Light weight process
B. Heavy weight process
C. Multi process
D. I/O Process

15. A process is more than a program code, which is sometimes known as the
(a) text section
(b) content of the processors registers
(c) stack
(d) Data section

16. Which state of the process defined "The process is being created"
(a) New
(b) Running
(c) Ready
(d) Waiting

17. Each process is represented in the operating system by a
(a)Process control block
(b) Printed circuit board
(c) Program control block
(d) Problem control block

18. Thread shares with other threads belonging to the same process its
(a)Thread ID
(b) Program counter
(c) Register set and a stack
(d) Code and data section

19. In operating system, each process has its own _____
(a) address space and global variables
(b) open files
(c) pending alarms, signals, and signal handlers
(d) all of the mentioned

20. The systems which allow only one process execution at a time, are called as_____
(a) Uniprogramming systems
(b) Uniprocessing systems
(c) Unitasking systems
(d) None of the mentioned

21. 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

22. If a process fails, most operating system write the error information to a_____
(a) log file
(b) another running process
(c) new file
(d) none of the mentioned

23. User threads are
(a) supported above the kernel and are managed with kernel support
(b) supported below the kernel and are managed without kernel support
(c) supported above the kernel and are managed without kernel support
(d) supported below the kernel and are managed with kernel support

you also recheck the ans. of Q.23,24

24. A solution to the critical section problem must satisfy which of the following three requirements
I. Mutual exclusion
II. Progress
III. Un-bounded waiting
IV. Bounded waiting
(a) 2,3,4
(b) 1,3,4
(c) 1,2,3
(d) 1,2,4

25. A non preemptive kernel essentially free from race conditions

(a) True
(b) False

26. Most operating systems identify processes according to a unique
(a) Program counter
(b) Process state
(c) Process number
(d)Process identifier

27. In message passing systems of Inter process communication
(a) Message sent by a process can be either fixed or variable in size
(b) Message sent by a process can be fixed in size
(c) Message sent by a process can be Variable in size
(d) None of the above

28. Process are classified into different groups in _____
a) shortest job scheduling algorithm
b) round robin scheduling algorithm
c) priority scheduling algorithm
d) multilevel queue scheduling algorithm

29. In multilevel feedback scheduling algorithm _____
a) a process can move to a different classified ready queue
b) classification of ready queue is permanent
c) processes are not classified into groups
d) none of the mentioned

30. Which one of the following cannot be scheduled by the kernel?
a) kernel level thread
b) user level thread
c) process
d) none of the mentioned

31. Which module gives control of the CPU to the process selected by the short-term scheduler?
a) dispatcher
b) interrupt
c) scheduler
d) none of the mentioned

32. The processes that are residing in main memory and are ready and waiting to execute are kept on a list called _____
a) job queue
b) ready queue

c) execution queue
d) process queue

33. The interval from the time of submission of a process to the time of completion is termed as _____
a) waiting time
b) turnaround time
c) response time
d) throughput

34. Which scheduling algorithm allocates the CPU first to the process that requests the CPU first?
a) first-come, first-served scheduling
b) shortest job scheduling
c) priority scheduling
d) none of the mentioned

35. In priority scheduling algorithm _____
a) CPU is allocated to the process with highest priority
b) CPU is allocated to the process with lowest priority
c) Equal priority processes cannot be scheduled
d) None of the mentioned

36. In priority scheduling algorithm, when a process arrives at the ready queue, its priority is compared with the priority of _____
a) all process
b) currently running process
c) parent process
d) init process

37. Which algorithm is defined in Time quantum?
a) shortest job scheduling algorithm
b) round robin scheduling algorithm
c) priority scheduling algorithm
d) multilevel queue scheduling algorithm

38. Process are classified into different groups in _____
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39. In multilevel feedback scheduling algorithm _____
a) a process can move to a different classified ready queue

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40. Which one of the following can not be scheduled by the kernel?
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b) user level thread
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41. In Operating Systems, which of the following is/are CPU scheduling algorithms?
(a) Round Robin
(b) Shortest Job First
(c) Priority
(d) All of the mentioned

42. 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

43. The ready queue is generally stored as a
(a) Array
(b) Stack
(c) Linked list
(d) None of the above

44. Copying a process from memory to disk to allow space for other processes is called
(a) Swapping
(b) Deadlock
(c) Demand paging
(d) Page fault

45. The process is swapped out of memory and is later swapped into memory, by the
(a) Long-term scheduler
(b) Short-term scheduler
(c) Medium-term scheduler
(d) None of the above

46. In _____, processes remain blocked indefinitely, which affects user service,

throughput and resource efficiency.

A. Deadlock
B. Resource Allocation
C. Resource Synchronization
D. Process Synchronization

47. The concept in which, Kernel does not make resource allocations that may lead to deadlocks is known as _____.

A. Deadlock avoidance
B. Deadlock prevention
C. Deadlock detection
D. Deadlock creation

48. i. Synchronization deadlock: occurs when awaited events take the signals between processes.
ii. Communication deadlock: Occurs for set of processes if each process sends a message only after it receives a message from some other process in the set.

A. Only i is true.
B. Only ii is true.
C. Both i & ii are true.
D. None of these.

49. All the information regarding resource allocation with its state is simply called the _____ of a system.

A. synchronization state
B. resource state
C. allocation state
D. deadlock state

50. _____ contains two kinds of nodes- process nodes, and resource nodes.

A. RAGG
B. WFG
C. WWFG
D. RRAG

51. To prevent _____ condition, either a process that holds resources should not be permitted to make resource requests, or a process that gets blocked on a resource request should not be permitted to hold any resources.

A. Hold-and-Wait
B. Pre-emption
C. Non-shareable
D. Circular Wait

52. The cause of deadlocks is _____.

A. Each process is in running condition.
B. Each process needing what another process has.
C. Every process wants to win.
D. The need of each process is different.

53. In _____ condition, itexists a set of processes: {P1, P2, ..., Pn} such that
    i. P1 is waiting for a resource held by P2
    ii. P2 is waiting for a resource held by P3...
    iii. Pn-1 is waiting for a resource held by Pn
    iv. Pn is waiting for a resource held by P1
A. Mutual Exclusion
B. Hold and Wait
C. No Pre-emption
D. Circular Wait

54. If the resource allocation graph contains a cycle then a deadlock _____.
A. may exist.
B. exists for some time.
C. exist.
D. will exist.

55. The _____ dynamically examines the resource-allocation state to ensure that there can never be a circular-wait condition.
A. deadlock-avoidance algorithm
B. resource-allocation algorithm
C. resource Ranking
D. deadlock-detection algorithm

56. “Association of memory addresses with instructions and data of a program” is nothing but _____.
A. Memory binding
B. Memory hierarchy
C. Memory fragmentation
D. Memory allocation

57. “To create an illusion of fast and large memory at low cost” is the purpose of _____.
A. Managing the Memory
B. Managing resources
C. Managing the resource hierarchy
D. Managing the memory hierarchy

58. Memory is managed by both the kernel and the _____ of the programming language.

A. run-time library
B. kernel allocation
C. caches mapping techniques
D. kernel allocation

59. Disk in virtual memory is managed by the _____.
A. disk Management
B. kernel
C. disk allocation techniques
D. memory managing hierarchy

60. In _____, binding performed before the execution of a program (or operation of a software system).
A. Relative Binding
B. Static Binding
C. Dynamic Binding
D. disk Management

61. _____ binding is represented by the methods of *dynamic* binding.
A. Early
B. Memory
C. Resource
D. Late

62. PCD data is allocated by using a data structure called a heap. Here PCD stands for _____.
A. Per Candidate Deviation
B. Program Controlled Data
C. Polly Controlled DE allocated
D. Program Controlled Dynamic

63. _____ remembers which entry in the free list was used to make last allocation.
A. Next-fit technique
B. Best-fit technique
C. External fragmentation
D. Internal fragmentation

64. If _____, it might repeatedly allocate and free memory of specific sizes.
A. a process makes heavy use of the heap
B. a process deals with a multiprocessor environment
C. a process is doing Low-fragmentation of memory
D. a process is multiplying the sizes of memory areas

65. Specifically, _____ is the classical memory allocation model in which each

process is allocated a single contiguous area in memory.

A. Static memory allocation
B. Contiguous memory allocation
C. Dynamic memory allocation
D. Heap memory allocation

66. _____ organize file management into two components called the file system and the input-output control system (IOCS).

A. Operating System
B. File System
C. Disk Management System
D. Supportive System

67. A file system provides several *file types.* Each type gives its own abstract view of data in a file. We call it a _____ of data.

A. structural View
B. logical View
C. abstract view
D. system view

68. Data can be comfortably *stored* for a period of time.

A. True
B. False

69. Which of the following is not a facility Provided by the File System

i. Directory structures for convenient grouping of files
ii. Protection of files against illegal accesses
iii. File sharing semantics for concurrent accesses to a file
iv. File renaming of unauthorized users.

70. Main memory is a volatile storage device that loses its contents when power is turned off or otherwise lost.

A. True
B. False

71. Which of the following is not a facility provided by the IOCS:

A. Efficient operation of I/O devices
B. Efficient access to data in a file
C. Both A & B
D. Efficient use of data in file system

72. The data used to access files is called _____.

A. abstract data
B. control data, or metadata

C. data collector
D. data view

73. Which one is not a correct type of files from the following:
A. documents, spread sheets, photos, and video clips
B. executable programs
C. textual information
D. compressed large file

74. Sequential access and Random access are two types of _____.
A. File access pattern
B. Record access pattern
C. Format access pattern
D. Formal access pattern

75. Take odd man out:
a. Sequential file organization,
b. Direct file organization
c. Indirect file organization
d. Index sequential file organization

A. Option a
B. Option b
C. Option c
D. Option d

Subjective Questions

1. Explain monolithic operating system
2. Discuss an abstract view of an Operating system
3. What are the functions of an operating system?
4. Distinguish between hard and real time operating system
5. Explain multiprogramming operating system
6. What is an operating system? Explain time sharing operating system
7. What are the fundamental principles of an Operating System?
8. Explain program status word (PSW)
9. Explain Distributed operating system
10. Explain kernel based operating system
11. Explain Microkernel based operating system
12. Explain the process state transitions of processes using a diagram
13. What is PCB? Why it is required and what are its contents
14. What is context switching? What is the role of dispatcher?
15. Define and explain race condition
16. Write short note on semaphores
17. Write short note on thread
18. Explain critical section
19. What are the different synchronization approaches?
20. Write short note on bounded buffer problem with structure of the producer and consumer process
21. Explain Dining philosopher problem using semaphores
22. What are the different scheduling terminologies?
23. Distinguish between pre-emptive SJF and Non Preemptive SJF
24. Draw and explain different types of schedulers
25. Explain FCFS scheduling in detail
26. Explain round robin scheduling in detail
27. Explain Non pre-emptive scheduling policies with one example
28. Explain Pre-emptive scheduling policies with one example
29. Explain highest response ratio in detail
30. Explain Pre-emptive SJF in detail with example
31. Consider the following processes with arrival time, burst time. Calculate average waiting time, average turnaround time using FCFS algorithm

Process	Arrival time (in ms)	Burst time
P1	0	11
P2	2	1
P3	3	4
P4	4	2

32. Consider the following processes with arrival time, burst time and time quantum=2.

    Calculate average waiting time, average turnaround time using round-robin algorithm

Process	Arrival time (in ms)	Burst time
P1	0	5
P2	1	4
P3	2	2
P4	4	1

33. What is deadlock?Comment onconceptof deadlock with an example.
34. Explain in details fundamental approaches for deadlock handling.
35. Write note on,
    i. Synchronization deadlock

    ii. Communication deadlock.

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36. Comment on Deadlocks in Resource Allocation.
37. Give an account of deadlock avoidance in detail.
38. Write note on Deadlock detection and resolution.
39. Give an account of Deadlock Avoidance.
40. With the explained list of approaches, explain the concept of Deadlock Prevention.
41. Comment on,
    i. RRAG
    ii. WFG
42. Explain the Deadlock prevention Approach.

43. Comment “Managing the memory hierarchy”.
44. What is Static and dynamic memory allocation?
45. What is Memory binding? Explain Dynamic Binding.
46. Comment on Memory Fragmentation.
47. With a diagram explain the concept of Boundary Tags and free list pointer.

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48. With a neat labelled diagram, explain Memory Compaction.
49. Give an account of Contiguous memory allocation.
50. Give an account of Non-Contiguous memory allocation.
51. Write note on,
    i. Paging
    ii. Segmentation

52. Comment on Page Table.
53. Introduce the File system and IOCS.
54. Comment on Facilities Provided by the File System and IOCS.
55. Comment on Data and Metadata.
56. ExplainFile Types.
57. Write note on,
    - **i.** File Attributes
    - **ii.** File Operations
58. What are the fundamental file organizations??
59. Explain in detail Direct File Organization from the fundamental file organizations.
60. Comment on Layers of the file system and the IOCS.
61. Give an Overview of I/O system.
62. Give an account of Sequential File Organization.