Subject - Operating System (22516)

SYLLABUS

Chapter No.	Name of chapter	Marks With Option
1	Overview of operating system	08
2	Services and components of operating system	10
3	Process management	14
4	CPU scheduling and algorithms	14
5	Memory management	14
6	File management	10
	Total Marks: -	**70**

BOARD THEORY PAPER PATTERN FOR OSY (22516)

Q.1		**Attempt any FIVE** **5*2=10**
	a)	Overview of Operating System
	b)	Services and Components of Operating system
	c)	Process Management
	d)	CPU Scheduling and Algorithm
	e)	Memory Management
	f)	Process Management
	g)	File Management
Q.2		**Attempt any THREE** **3*4=12**
	a)	Overview of Operating System
	b)	Overview of Operating System
	c)	Process Management
	d)	CPU Scheduling and Algorithm
Q.3		**Attempt any THREE** **3*4=12**
	a)	Process Management

	b)	CPU Scheduling and Algorithm
	c)	Memory Management
	d)	File Management
Q.4		**Attempt any THREE** **3*4=12**
	a)	File Management
	b)	Services and Components of Operating system
	c)	Process Management
	d)	CPU Scheduling and Algorithm
	e)	Process Management
Q.5		**Attempt any TWO** **2*6=12**
	a)	Services and Components of Operating system
	b)	Process Management
	c)	Memory Management
Q.6		**Attempt any TWO** **2*6=12**
	a)	CPU Scheduling and Algorithm
	b)	Memory Management
	c)	File Management

CLASS TEST - I

PAPER PATTERN

COURSE: - Operating System (22516)

PROGRAMME: - Information Technology

Syllabus: -

Unit No.	Name of the Unit	Course Outcome (CO)
1	**Overview of operating system**	**CO-516.1**
2	**Services and components of operating system**	**CO-516.2**
3	**Process management**	**CO-516.3**

Q.1	**Attempt any FOUR 4*2=8Marks**	**Course Outcome (CO)**
a)	Overview of operating system	CO-516.1
b)	Services and components of operating system	CO-516.2
c)	Process management	CO-516.3
d)	Overview of operating system	CO-516.1
e)	Services and components of operating system	CO-516.2
f)	Process management	CO-516.3
Q.2	**Attempt any TWO 3*4=12Marks**	
a)	Overview of operating system	CO-516.1
b)	Services and components of operating system	CO-516.2
c)	Process management	CO-516.3
c)	Process management	CO-516.3

CLASS TEST - II

PAPER PATTERN

COURSE: - Operating System (22516)

PROGRAMME: - Information Technology

Syllabus: -

Unit No.	Name of the Unit	Course Outcome (CO)
4	**CPU scheduling and algorithms**	**CO-516.4**
5	**Memory management**	**CO-516.5**
6	**File management**	**CO-516.6**

Q.1	**Attempt any FOUR** **4*2=8Marks**	**Course Outcome (CO)**
a)	CPU scheduling and algorithms	(CO-516.4)
b)	CPU scheduling and algorithms	(CO-516.4)
c)	Memory management	(CO-516.5)
d)	Memory management	(CO-516.5)
e)	File management	(CO-516.6)
f)	File management	(CO-516.6)
Q.2	**Attempt any TWO 3*4=12Marks**	
a)	CPU scheduling and algorithms	(CO-516.4)
b)	CPU scheduling and algorithms	(CO-516.4)
c)	Memory management	(CO-516.5)
d)	File management	(CO-516.6)

COURSE OUTCOME

(CO)

COURSE: - Operating System (22516)

PROGRAMME: - Information Technology

CO. NO.	Course Outcome
CO-516.01	Install operating system and configure it.
CO-516.02	Use operating system tools to perform various functions.
CO-516.03	Execute process commands for performing process management operations.
CO-516.04	Apply scheduling algorithms to calculate turnaround time and average waiting time.
CO-516.05	Calculate efficiency of different memory management techniques.
CO-516.06	Apply file management techniques.

1. Overview of operating system

Position in Question Paper **Total Marks-08**

Q.1. a) 2-Marks.
Q.2. a) 4-Marks.
Q.2. b) 4-Marks.

Descriptive Question

1. Define operating system.
2. Explain the need of operating system
3. Explain different components of operating System
4. State different operations of operating system.
5. Explain resource management of operating system.
6. Explain batch operating system.
7. Explain multiprogrammed operating system.
8. Explain time shared operating system.
9. Explain multiprocessing operating system.
10. Explain distributed operating system.
11. Explain network operating system.
12. Explain architecture of operating system.
13. Explain history of UNIX OS.
14. Explain features of UNIX
15. Explain features of LINUX OS.
16. Explain features of WINDOWS OS.
17. Explain components of LINUX OS.
18. Compare MSDOS AND WINDOWS
19. Compare GUI and CUI.
20. How linux is more advantageous than windows?

MCQ Question

(Total number of Question=Marks*3=8*3=24)

Note: Correct answer is marked with **bold.**

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. The address of the next instruction to be executed by the current process is provided by the
   a) CPU registers
   b) **Program counter**
   c) Process stack
   d) system

3. In _____ OS, the response time is very critical.
   a) Multitasking
   b) Batch
   c) Online
   d) **Real-Time**

4. Which technique was introduced because a single job could not keep both the CPU and the I/O devices busy
   a)Time Sharing
   b) Spooling
   c) Preemptive scheduling
   d) **Multiprogramming**

5. The first batch operating system was developed in the_____ by general motors for use on an IBM 701
   a)Mid 1940's
   b) **Mid 1950's**
   c) Mid 1960's
   d) Mid 1970's

6. Multiprogramming of computer system increases ___
   a)Memory
   b) Storage
   c) **CPU Utilization**
   d) Cost

7. Multiprogramming systems _____.
   a) are easier to develop than single programming systems
   b) execute each job faster
   c) execute more jobs in the same time period
   d) are used only on large mainframe computers

8. What runs on computer hardware and serve as platform for other softwares to run on?
   a) Operating System
   b) Application Software
   c) System Software
   d) All of the above

9. The User View of the system depends upon the
   a) CPU
   b) Software
   c) Hardware
   d) Interface

10.___ is a file that includes a series of commands that are executed in sequence without any input from the user.
   a) Batch file
   b) Path
   c) Pipe
   d) All of these

11.By Operating system the resources management can be done via
   a) Time Division Multiplexing
   b) Space Division Multiplexing
   c) Both (a) and (b)
   d) None of the mentioned

12. Which one the following error will be handle by the operating system
   a) Power Failure
   b) Lack of paper in printer
   c) connection failure in network
   d) All of the mentioned

13.The main function of the command interpreter is:
   a) to get and execute the next user-specified command
   b) to provide the interface between the API and application program
   c) to handle the files in operating system
   d) none of the mentioned

14. Which is operating system
   a) collection of programs that manages hardware resource
   b) system service provider to the application program
   c)link to interface the hardware and application programs
   d)all of the mentioned

15.Which of the following is not an important functions of an operating System?
   a) Memory Management
   b) File Management
   c) Virus Protection
   d) Processor Management

16.User view of system depends upon the
   a) CPU
   b) software
   c) hardware
   d) Interface

17.A platform for other software to run on is called _____
   a) Operating System
   b) System Software
   c) Application Software
   d) All

18.When a process fails, most OS write the error information to a _____
   a) **new file**
   b) another running process
   c) log file
   d) none

19.Which of the following is the main function of the command interpreter?
   a) to handle the files in the operating system

b) to provide the interface between the API and application program
c) **to get and execute the next user-specified command**
d) none of the above

20. Distributed processing involves
a) Allowing users to share files on a network
b) Allowing users to access network resources away from the office
c) Solving computing problems by breaking them into smaller parts that are separately processed by different computers
d) Solving computer component problems from a different compute

21. Multithreading on a multi CPU machine
a) can increase or decrease the concurrency
b) doesn't affected the concurrency
c) decreases concurrency
d) increases concurrency

22. Multiprocessing
a) allows the same computer to have multiple processors
b) is completely understood by all major computer vendors
c) allows multiple processes to run simultaneously
d) makes the operating system simpler

23. Which of the following is not an advantage of multiprogramming?
a) Ability to assign priorities to jobs
b) Decreased operating system overhead
c) Shorter response time
d) Increased throughout

24. What are the two basic types of operating systems?
a) Batch and interactive
b) Sequential and real time
c) Sequential and direct
d) **Batch and time sharing**

2. Services and Components of Operating System

Position in Question Paper **Total Marks-10**

Q.1. b) 2-Marks.
Q.4. b) 4-Marks.
Q.5. a) 6-Marks.

Descriptive Question

1. Explain in brief provided by operating system.
2. Define system call. Explain its different types.
3. Explain in short process management component of operating system.
4. Explain in short main memory management component of operating system.
5. Explain in short storage management component of operating system.
6. Explain in short file management component of operating system.
7. Explain in short I/O management component of operating system.
8. Explain in short secondary storage management component of operating system.
9. Explain the use of operating system tools.
10. Write a note on task scheduler.
11. Explain the use of password authentication in OS.
12. Explain the role of administration in security of OS.
13. Explain the device drivers and device files.
14. What are the different file permission types?
15. Explain the concept of performance monitor.

MCQ Question

(Total number of Question=Marks*3=10*3=30)

Note: Correct answer is marked with **bold**

1. A system call is a routine built into the kernel and performs a basic function.
   a) **True**
   b) False
2. When we execute a C program, CPU runs in ____ mode.
   a) **user**
   b) kernel
   c) supervisory
   d) system
3. The chmod command invokes the ____ system call.
   a) **chmod**
   b) ch
   c) read
   d) change
4. There are ___ modes of opening a file.
   a) 4
   b) **3**
   c) 2
   d) 1
5. To access the services of operating system, the interface is provided by the _____
   a) **System calls**
   b) API
   c) Library
   d) Assembly instructions
6. The kernel is _____ of user threads.
   a) a part of
   b) the creator of
   c) **unaware of**
   d) aware of
7. 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
8. What are the services operating System provides to both the users and to the programs?
   a) File System manipulation
   b) Error Detection
   c) Program execution
   d) Resource Allocation
9. Which of the following is false about File system manipulation?
   a) Computers can store files on the disk (Primary storage), for long-term storage purpose
   b) Program needs to read a file or write a file.
   c) Operating System provides an interface to the user to create/delete files.
   d) Operating System provides an interface to create the backup of file system.

10. The OS ensures that all access to system resources is controlled. The major activities of an operating system with respect to?
a) Error handling
c) Protection
b) Resource Management
d) Communication

11. Which of the following is true about Communication?
a) The OS handles routing and connection strategies, and the problems of contention and security.
b) Two processes often require data to be transferred between them.
c) Communication may be implemented by two methods, either by Shared Memory or by Message Passing.
d) All of the above

12. In OS, Memory management refers to management of?
a) Primary Memory
c) Secondary Memory
b) Main Memory
d) Both A and B

13. When an application is running it's memory space cannot be accessed by other applications is known as _____mode
a) Real
c) Compatibility
b) Virtual real
d) protected

14. In what mode can only one program be executed at on time?
a) Real
c) Compatibility
b) Virtual real
d) protected

15. Which of the following commands should you use to delete files on a linux system ?
a) mv
c) delete
b) rm
d) expunge

16._____ refers to putting data of various I/O jobs in a buffer.
a) Real Time System
c) **Spooling**
b) Interactivity
d) None of the above

17. To start an I/O operation device driver loads appropriate register into?
a) memory
c) Device Controller
b) Secondary storage
d) Arrays

18. Each user of computer system that uses computer services has at least
a) 1program
c) 3programs
b) 2programs
d) 4programs

19. The operating system as a devices management keeps track of devices, channels and control units is called as
a) I/O receiver
c) I/O manager
b) I/O traffic controller
d) I/O dispatch

20. Which of the following is not application software?
a) **Windows 7** c) Photoshop
b) WordPad d) MS-excel

21.Which program runs first after booting the computer and loading the GUI?
a) Desktop Manager c) Windows Explorer
b) File Manager **d) Authentication**

22.Which of the following is a single-user operating system?
a) Windows **c) Ms-Dos**
b) MAC d) None of these

23. For reading input, which of the following system call is used?
a) Write c) **Read**
b) Rd d) change

24. Interfaces of operating system provides
a) Optimization **c)** Reusability
b) Designing **d) Portability**

25. Which of the following is not an important functions of an operating System?
a) Memory Management c) **Virus Protection**
b) File Management **d)** Process Management

26.Which one is not an operating system?
a) **P11** c) Windows
b) OS/2 d) Unix

28. runs on a computer hardware and serves as a platform for other system to run on
a) **Operating system** c) System software
b) Application system d) All of above

29.The ……. contains commands associated with the My Computer window
a) Standard menu c) Start menu
b) **System menu** **d)** None of the above

30.Which mode loads a minimal set of drivers when starting Windows?
a) Safe Mode c) VGA Mode.
b) Normal Mode d) Network Support Mode

31.Which of the following memory unit that processor can access more rapidly
a) Main Memory c) Virtual Memory
b) **Cache memory** d) Read Only Memory

3. Process Management

Position in Question Paper **Total Marks-14**

Q.1. c) 2-Marks.
Q.1. f) 2-Marks.
Q.2. c) 4-Marks.
Q.3. a) 4-Marks.
Q.4. c) 4-Marks.
Q.4. e) 4-Marks.
Q.5. b) 6-Marks

Descriptive Question

1. Define process.
2. Explain process state diagram. Explain PCB in detail.
3. Enlist different types of queues.
4. Compare long term, medium term and short term scheduling.
5. Explain context switch.
6. Explain inter process communication.
7. Explain how shared memory is used for inter process communication.
8. Explain how message passing system is used for inter process communication.
9. Define thread. Give its advantages.
10. Compare process and thread.
11. Explain user level and kernel level thread
12. Define multithreading
13. Explain different types of multithreading models.
14. Explain the use of following commands Ps,wait,sleep,kill,exit.

MCQ Question

(Total number of Question=Marks*3=14*3=42)

Note: Correct answer is marked with **bold**

1. The systems which allow only one process execution at a time, are called _____
   a) uniprogramming systems
   b) **uniprocessing systems**
   c) unitasking systems/
   d) none of the mentioned
2. A process can be terminated due to _____
   a) normal exit
   b) fatal error
   c) killed by another process
   d) **all of the mentioned**
3. What is the ready state of a process?
   a) **when process is scheduled to run after some execution**
   b) when process is unable to run until some task has been completed
   c) when process is using the CPU
   d) none of the mentioned
4. What is interprocess communication?
   a) communication within the process
   b) **communication between two process**
   c) communication between two threads of same process
   d) none of the mentioned
5. A process stack does not contain _____
   a) Function parameters
   b) Local variables
   c) Return addresses
   d) **PID of child process**
6. Which system call returns the process identifier of a terminated child?
   a) **wait**
   b) exit
   c) fork
   d) get
7. A Process Control Block(PCB) does not contain which of the following?
   a) Code
   b) Stack
   c) **Bootstrap program**
   d) Data
8. The number of processes completed per unit time is known as _____
   a) Output
   b) **Throughput**
   c) Efficiency
   d) Capacity
9. Which of the following is not the state of a process?
   a) New
   b) **Old**
   c) Waiting
   d) Running

10.The entry of all the PCBs of the current processes is in _____
a) Process Register
b) Program Counter
c) **Process Table**
d) Process Unit

11.A single thread of control allows the process to perform _____
a) **only one task at a time**
b) multiple tasks at a time
c) only two tasks at a time
d) all of the mentioned

12.Which process can be affected by other processes executing in the system?
a) cooperating process
b) child process
c) parent process
d) init process

13.Which one of the following is a synchronization tool?
a) thread
b) pipe
c) **semaphore**
d) socket

14.Mutual exclusion can be provided by the _____
a) mutex locks
b) binary semaphores
c) **both mutex locks and binary semaphores**
d) none of the mentioned

15.Which of the following do not belong to queues for processes?
a) Job Queue
b) **PCB queue**
c) Device Queue
d) Ready Queue

16.What will happen when a process terminates?
a) **It is removed from all queues**
b) It is removed from all, but the job queue
c) Its process control block is de-allocated
d) Its process control block is never de-allocated

17. What is a long-term scheduler?
a) **It selects which process has to be brought into the ready queue**
b) It selects which process has to be executed next and allocates CPU
c) It selects which process to remove from memory by swapping

18.If one thread opens a file with read privileges then _____
a) other threads in the another process can also read from that file
b) **other threads in the same process can also read from that file**
c) any other thread can not read from that file
d) all of the mentioned

19.The time required to create a new thread in an existing process is _____
a) greater than the time required to create a new process
b) **less than the time required to create a new process**

c) equal to the time required to create a new process
d) none of the mentioned

20. A process can be _____
a) single threaded
b) multithreaded
c) **both single threaded and multithreaded**
d) none of the mentioned

21. Which of the following information is stored when the process is switched?
a) I/O State information
b) Accounting information
c) Base and limit register value
d) All of the above

22. The switching of the CPU from one process or thread to another is called _____
a) process switch
b) task switch
c) context switch
d) all of the mentioned

23. Concurrent access to shared data may result in _____
a) data consistency
b) data insecurity
c) data inconsistency
d) none of the mentioned

24. Message passing system processes to _____
a) communicate with one another without resorting to shared data
b) communicate with one another by resorting to shared data
c) share data
d) name the recipient or sender of the message

25. Which of the following is true about kernal level thread?
a) Implementation is by a thread library at the user level.
b) **Kernel-level threads are slower to create and manage**.
c) Multi-threaded applications cannot take advantage of multiprocessing.
d) Both B and C

26. Which of the following is true about user level thread?
a) User level thread is specific to the operating system.
b) User-level routines themselves can be multithreaded.
c) **User-level threads are faster to create and manage**.
d) All of the above

27. Multithreading on a multi : CPU machine _____
a) decreases concurrency
b) increases concurrency
c) doesn't affect the concurrency
d) can increase or decrease the concurrency

28.Which of the following is the drawback of the One to One Model?
a) increased concurrency provided by this model
b) decreased concurrency provided by this model
c) creating so many threads at once can crash the system
d) **creating a user thread requires creating the corresponding kernel thread**

29. In the Many to One model, multiple threads are unable to run in parallel on multiprocessors because of _____
a) **only one thread can access the kernel at a time**
b) many user threads have access to just one kernel thread
c) there is only one kernel thread
d) none of the mentioned

30. The processes which are blocked due to unavailability of an I/O device constitute this queue
a) Process Scheduling Queues
b) Job queue
c) Ready queue
d) **Device queues**

31. Which scheduler is also called a job scheduler?
a) Long-Term Scheduler
b) Short-Term Scheduler
c) Medium-Term Scheduler
d) All of the above

32. Which Scheduler is a part of Time sharing systems?
a) Long-Term Scheduler
b) Short-Term Scheduler
c) Medium-Term Scheduler
d) Swapping

33. A_____ is the mechanism to store and restore the state
a) PCB
b) Program Counter
c) Scheduling information
d) context switch

34. The primary distinction between the short term scheduler and the long term scheduler is _____
a) The length of their queues
b) The type of processes they schedule
c) **The frequency of their execution**
d) None of the mentioned

35. Suppose that a process is in “Blocked” state waiting for some I/O service. When the service is completed, it goes to the _____
a) Running state
b) **Ready state**
c) Suspended state
d) Terminated state

36. Which of the following need not necessarily be saved on a context switch between processes?

a) General purpose registers
b) **Translation lookaside buffer**
c) Program counter
d) All of the mentioned

37.Which of the following does not interrupt a running process?
a) A device
b) Timer
c) **Scheduler process**
d) Power failure

38. Message passing system allows processes to _____
a) **communicate with one another without resorting to shared data**
b) communicate with one another by resorting to shared data
c) share data
d) name the recipient or sender of the message

39. Messages sent by a process _____
a) have to be of a fixed size
b) have to be a variable size
c) **can be fixed or variable sized**
d) None of the mentioned

40. The link between two processes P and Q to send and receive messages is called _____
a) **communication link**
b) message-passing link
c) synchronization link
d) all of the mentioned

41. In the non blocking send _____
a) the sending process keeps sending until the message is received
b) **the sending process sends the message and resumes operation**
c) the sending process keeps sending until it receives a message
d) none of the mentioned

42. Which of the following two operations are provided by the IPC facility?
a) write & delete message
b) delete & receive message
c) send & delete message
d) **receive & send message**

4. CPU Scheduling and Algorithm

Position in Question Paper **Total Marks-14**

Q.1. d) 2-Marks.
Q.2. d) 4-Marks.
Q.3. b) 4-Marks.
Q.4. d) 4-Marks.
Q.6. a) 6-Marks.

Descriptive Question

1. Explain the objective of scheduling.
2. Define CPU and I/O burst cycle.
3. Compare preemptive and non-preemptive scheduling.
4. Explain different criteria for cpu scheduling.
5. Explain FCFS with example.
6. Explain SJF with example.
7. Explain Priority scheduling algorithm with example.
8. Explain Round robin scheduling algorithm with example.
9. Explain multilevel queue scheduling.
10. Explain deadlock with system call.
11. Explain necessary condition for deadlock.
12. Explain deadlock prevention in detail.
13. Explain deadlock avoidance.
14. Explain bankers algorithm with all steps.

MCQ Question

(Total number of Question=Marks*3=14*3=42)

Note: Correct answer is marked with **bold**

1.Round robin scheduling falls under the category of _____

a) Non-preemptive scheduling
b) **Preemptive scheduling**
c) All of the mentioned
d) None of the mentioned

2. What is FIFO algorithm?

a) first executes the job that came in last in the queue
b) **first executes the job that came in first in the queue**
c) first executes the job that needs minimal processor
d) first executes the job that has maximum processor needs

3. The strategy of making processes that are logically runnable to be temporarily suspended is called _____

a) Non preemptive scheduling
b) **Preemptive scheduling**
c) Shortest job first
d) First come First served

4. Which of the following statements are true?

I. Shortest remaining time first scheduling may cause starvation
II. Preemptive scheduling may cause starvation
III. Round robin is better than FCFS in terms of response time

a) I only
b) I and III only
c) II and III only
d) I, II and III

5. Which of the following condition is required for a deadlock to be possible?

a) mutual exclusion
b) a process may hold allocated resources while awaiting assignment of other resources
c) no resource can be forcibly removed from a process holding it
d) **all of the mentioned**.

6. A system is in the safe state if _____

a) the system can allocate resources to each process in some order and still avoid a deadlock
b) there exist a safe sequence
c) all of the mentioned
d) none of the mentioned

7. The circular wait condition can be prevented by _____

a**) defining a linear ordering of resource types**
b) using thread
c) using pipes
d) all of the mentioned

8. Which one of the following is the deadlock avoidance algorithm?
a) **banker's algorithm** c) elevator algorithm
b) round-robin algorithm d) karn's algorithm

9. Deadlock prevention is a set of methods _____
a) to ensure that at least one of the necessary conditions cannot hold
b) to ensure that all of the necessary conditions do not hold
c) to decide if the requested resources for a process have to be given or not
d) to recover from a deadlock

10. All unsafe states are _____
a) deadlocks c) fatal
b) not deadlocks d) none of the mentioned

11. An edge from process Pi to Pj in a wait for graph indicates that _____
a) Pi is waiting for Pj to release a resource that Pi needs
b) Pj is waiting for Pi to release a resource that Pj needs
c) Pi is waiting for Pj to leave the system
d) Pj is waiting for Pi to leave the system

12. If the wait for graph contains a cycle _____
a) then a deadlock does not exist
b) **then a deadlock exists**
c) then the system is in a safe state
d) either deadlock exists or system is in a safe state

13. The FCFS algorithm is particularly troublesome for _____
a) **time sharing systems**
b) multiprogramming systems
c) multiprocessor systems
d) operating systems

14. Preemptive Shortest Job First scheduling is sometimes called _____
a) Fast SJF scheduling
b) EDF scheduling – Earliest Deadline First
c) HRRN scheduling – Highest Response Ratio Next
d) SRTN scheduling – Shortest Remaining Time Next

15. Which of the following scheduling algorithms gives minimum average waiting time?
a) FCFS c) Round – robin
b) SJF d) Priority

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

a) job queue
c) execution queue
b) ready queue
d) process queue

17. The interval from the time of submission of a process to the time of completion is termed as _____

a) waiting time
c) response time
b) turnaround time
d) throughput

18. 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 can not be scheduled
d) None of the mentioned

19. 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

20. 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

21.Scheduling is done so as to _____

a) increase CPU utilization
c) keep the CPU more idle
b) decrease CPU utilization
d) none of the mentioned

22.Which of the following scheduling algorithms gives minimum average waiting time?

a) FCFS
c) Round – robin
b) **SJF**
d) Priority

23.Choose one of the disadvantages of the priority scheduling algorithm?

a) it schedules in a very complex manner
b) its scheduling takes up a lot of time
c) **it can lead to some low priority process waiting indefinitely for the CPU**
d) none of the mentioned

25. An SJF algorithm is simply a priority algorithm where the priority is _____
    a) **the predicted next CPU burst**
    b) the inverse of the predicted next CPU burst
    c) the current CPU burst
    d) anything the user wants
26. 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
27. 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 can not be scheduled
    d) None of the mentioned
28. Which is the most optimal scheduling algorithm?
    a) FCFS – First come First served
    b) **SJF – Shortest Job First**
    c) RR – Round Robin
    d) None of the mentioned
29. The real difficulty with SJF in short term scheduling is _____
    a) it is too good an algorithm
    b) **knowing the length of the next CPU request**
    c) it is too complex to understand
    d) none of the mentioned
30. The FCFS algorithm is particularly troublesome for _____
    a) time sharing systems
    b) **multiprogramming systems**
    c) multiprocessor systems
    d) operating systems
31. Consider the following set of processes, the length of the CPU burst time given in milliseconds.

Process time	Burst
P1	6

P2	**8**
P3	**7**
P4	**3**

Assuming the above process being scheduled with the SJF scheduling algorithm.

a) **The waiting time for process P1 is 3ms**
b) The waiting time for process P1 is 0ms
c) The waiting time for process P1 is 16ms
d) The waiting time for process P1 is 9ms

32. Complex scheduling algorithms _____
a) **are very appropriate for very large computers**
b) use minimal resources
c) use many resources
d) all of the mentioned

33. The portion of the process scheduler in an operating system that dispatches processes is concerned with _____
a) **assigning ready processes to CPU**
b) assigning ready processes to waiting queue
c) assigning running processes to blocked queue
d) all of the mentioned

34. An I/O bound program will typically have _____
a) a few very short CPU bursts
b) many very short I/O bursts
c**) many very short CPU bursts**
d) a few very short I/O bursts

35. What is Waiting time?
a) the total time in the blocked and waiting queues
b) **the total time spent in the ready queue**
c) the total time spent in the running queue
d) the total time from the completion till the submission of a process

36. What is Response time?
a) the total time taken from the submission time till the completion time
b) **the total time taken from the submission time till the first response is produced**
c) the total time taken from submission time till the response is output
d) none of the mentioned

37. The circular wait condition can be prevented by _____
    a) **defining a linear ordering of resource types**
    b) using thread
    c) using pipes
    d) all of the mentioned
38. What is the drawback of banker's algorithm?
    a) in advance processes rarely know how much resource they will need
    b) the number of processes changes as time progresses
    c) resource once available can disappear
    d) **all of the mentioned**
39. A problem encountered in multitasking when a process is perpetually denied necessary resources is called _____
    a) deadlock
    b) **starvation**
    c) inversion
    d) aging
40. Which one of the following is a visual (mathematical) way to determine the deadlock occurrence?
    a) **resource allocation graph**
    b) starvation graph
    c) inversion graph
    d) none of the mentioned
41. Deadlock prevention is a set of methods _____
    a) **to ensure that at least one of the necessary conditions cannot hold**
    b) to ensure that all of the necessary conditions do not hold
    c) to decide if the requested resources for a process have to be given or not
    d) to recover from a deadlock
42. For non sharable resources like a printer, mutual exclusion _____
    a) **must exist**
    b) must not exist
    c) may exist
    d) none of the mentioned

5. Memory Management

Position in Question Paper **Total Marks-14**

Q.1. e) 2-Marks.
Q.3. c) 4-Marks.
Q.5. c) 6-Marks.
Q.6. b) 6-Marks.

Descriptive Question

1. Explaining multiprogramming with fixed and variable partition techniques.
2. Explain contiguous allocation of memory.
3. Explain internal and external fragmentation.
4. Explain process of compaction with the example.
5. Explain different free space management technique.
6. Describe bit map and linked list free space management technique.
7. Explain virtual memory in detail.
8. Explain paging concept.
9. Explain segmentation with example. Q10. How demand paging is performed?
10. Define page fault.
11. Write an algorithm to for FIFO page replacement algorithm with example.
12. Write an algorithm to for LRU page replacement algorithm with example.
13. Write an algorithm to for OPTIMAL page replacement algorithm with example.

MCQ Question

(Total number of Question=Marks*3=14*3=42)

Note: Correct answer is marked with **bold**

1. Which one of the following is the address generated by CPU?
   a) **physical address** c) logical address
   b) absolute address d) none of the mentioned
2. Run time mapping from virtual to physical address is done by _____
   a) Memory management unit c) PCI
   b) CPU d) None of the mentioned
3. The page table contains _____
   a) base address of each page in physical memory
   b) page offset
   c) page size
   d) none of the mentioned
4. Physical memory is broken into fixed-sized blocks called _____
   a) **frames** c) backing store
   b) pages d) none of the mentioned
5. With paging there is no _____ fragmentation.
   a) internal c) either type of
   b) external d) none of the mentioned
6. The address of a page table in memory is pointed by _____
   a) stack pointer c) page register
   b) **page table base register** d) program counter
7. In fixed size partition, the degree of multiprogramming is bounded by _____
   a) **the number of partitions**
   b) the CPU utilization
   c) the memory size
   d) all of the mentioned
8. In contiguous memory allocation _____
   a) **each process is contained in a single contiguous section of memory**
   b) all processes are contained in a single contiguous section of memory
   c) the memory space is contiguous
   d) none of the mentioned

9. Another solution to the problem of external fragmentation problem is to _____
   a) **permit the logical address space of a process to be noncontiguous**
   b) permit smaller processes to be allocated memory at last
   c) permit larger processes to be allocated memory at last
   d) all of the mentioned
10. External fragmentation exists when?
   a) **enough total memory exists to satisfy a request but it is not contiguous**
   b) the total memory is insufficient to satisfy a request
   c) a request cannot be satisfied even when the total memory is free
   d) none of the mentioned
11. When the memory allocated to a process is slightly larger than the process, then _____
   a) **internal fragmentation occurs**
   b) external fragmentation occurs
   c) both internal and external fragmentation occurs
   d) neither internal nor external fragmentation occurs
12. The percentage of times a page number is found in the TLB is known as _____
   a) miss ratio
   b) **hit ratio**
   c) miss percent
   d) none of the mentioned
13. In paged memory systems, if the page size is increased, then the internal fragmentation generally _____
   a) becomes less
   b) **becomes more**
   c) remains constant
   d) none of the mentioned
14. In segmentation, each address is specified by _____
   a) **a segment number & offset**
   b) an offset & value
   c) a value & segment number
   d) a key & value
15. The segment limit contains the _____
   a) starting logical address of the process
   b) starting physical address of the segment in memory
   c) **segment length**
   d) none of the mentioned
16. The _____ swaps processes in and out of the memory.

a) **Memory manager** c) CPU manager
b) CPU d) User

17.The address generated by the CPU is referred to as _____
a) Physical address
b) **Logical address**
c) Neither physical nor logical
d) None of the mentioned

18.The run time mapping from virtual to physical addresses is done by a hardware device called the _____
a) Virtual to physical mapper c) Memory mapping unit
b) **Memory management unit** d) None of the mentioned

19.The size of a process is limited to the size of _____
a) physical memory c) secondary storage
b) external storage d) none of the mentioned

20.The size of a process is limited to the size of _____
a) physical memory c) secondary storage
b) external storage d) none of the mentioned

21.Swapping requires a _____
a) motherboard c) monitor
b) keyboard **d) backing store**

22.The _____ time in a swap out of a running process and swap in of a new process into the memory is very high.
a) context – switch c) execution
b) waiting d) all of the mentioned

23.Memory management technique in which system stores and retrieves data from secondary storage for use in main memory is called?
a) fragmentation c) mapping
b) paging d) none of the mentioned

24.Program always deals with _____
a) **logical address** c) physical address
b) absolute address d) relative address

25.What is compaction?
a) a technique for overcoming internal fragmentation
b) a paging technique
c) a technique for overcoming external fragmentation
d) a technique for overcoming fatal error

26.In internal fragmentation, memory is internal to a partition and _____
a) is being used
b) **is not being used**
c) is always used
d) none of the mentioned

27.Every address generated by the CPU is divided into two parts. They are _____
a) frame bit & page number
b) page number & page offset
c) page offset & frame bit
d) frame offset & page offset

28.The size of a page is typically _____
a) varied
b) power of 2
c) power of 4
d) none of the mentioned

29.Each entry in a translation lookaside buffer (TLB) consists of _____
a) key
b) value
c) bit value
d) constant

30.In paging the user provides only _____ which is partitioned by the hardware into _____ and _____
a) **one address, page number, offset**
b) one offset, page number, address
c) page number, offset, address
d) none of the mentioned

31.The offset ‘d’ of the logical address must be _____
a) greater than segment limit
b) between 0 and segment limit
c) between 0 and the segment number
d) greater than the segment number

32.When the entries in the segment tables of two different processes point to the same physical location _____
a) the segments are invalid
b) the processes get blocked
c) segments are shared
d) all of the mentioned

33.The aim of creating page replacement algorithms is to _____
a) replace pages faster
b) increase the page fault rate
c) decrease the page fault rate
d) to allocate multiple pages to processes

34.A FIFO replacement algorithm associates with each page the _____

a) **time it was brought into memory**
b) size of the page in memory
c) page after and before it
d) all of the mentioned

35.What is the Optimal page – replacement algorithm?
a) Replace the page that has not been used for a long time
b) Replace the page that has been used for a long time
c) **Replace the page that will not be used for a long time**
d) None of the mentioned

36.Optimal page – replacement algorithm is difficult to implement, because _____
a) it requires a lot of information
b) **it requires future knowledge of the reference string**
c) it is too complex
d) it is extremely expensive

37.LRU page – replacement algorithm associates with each page the _____
a) time it was brought into memory
b) **the time of that page's last use**
c) page after and before it
d) all of the mentioned

38.For 3 page frames, the following is the reference string:
7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1
How many page faults does the LRU page replacement algorithm produce?
a) 10
b) 15
c) 11
d) 12

39.Virtual memory allows _____
a) **execution of a process that may not be completely in memory**
b) a program to be smaller than the physical memory
c) a program to be larger than the secondary storage
d) execution of a process without being in physical memory

40.Virtual memory is normally implemented by _____
a) demand paging
b) buses
c) virtualization
d) all of the mentioned

41. A page fault occurs when?
a) a page gives inconsistent data
b) **a page cannot be accessed due to its absence from memory**

c) a page is invisible
d) all of the mentioned

42.When a page fault occurs, the state of the interrupted process is _____

a) disrupted
b) invalid
c) saved
d) none of the mentioned

43. Locality of reference implies that the page reference being made by a process _____

a) will always be to the page used in the previous page reference
b) **is likely to be one of the pages used in the last few page references**
c) will always be one of the pages existing in memory
d) will always lead to page faults

6. File Management

Position in Question Paper **Total Marks-10**

Q.1. g) 2-Marks.
Q.3. d) 4-Marks.
Q.4. a) 4-Marks.
Q.6. c) 6-Marks.

Descriptive Question

1. Explain file concept in operating system
2. Explain file attributes.
3. Explain file access methods.
4. Explain linked allocation of files with its advantages.
5. Explain indexed allocation of files with advantages and disadvantages. Describe different schemes for defining the logical structure of directory.
6. Explain physical structure of hard disk.
7. Explain logical structure of hard disk.
8. Explain RAID structure of disk.

MCQ Question

(Total number of Question=Marks*3=10*3=30)

Note: Correct answer is marked with **bold**

1. Which file is a sequence of bytes organized into blocks understandable by the system's linker?
   a) **object file**
   b) source file
   c) executable file
   d) text file
2. File type can be represented by _____
   a) file name
   b) file extension
   c) file identifier
   d) none of the mentioned
3. Data cannot be written to secondary storage unless written within a _____
   a) file
   b) swap space
   c) directory
   d) text format
4. A file is a/an _____ data type.
   a) abstract
   b) primitive
   c) public
   d) private
5. The operating system keeps a small table containing information about all open files called _____
   a) system table
   b) open-file table
   c) file table
   d) directory table
6. In UNIX, what will the open system call return?
   a) pointer to the entry in the open file table
   b) pointer to the entry in the system wide table
   c) a file to the process calling it
   d) none of the mentioned
7. Which of the following are the two parts of the file name?
   a) name & identifier
   b) identifier & type
   c) extension & name
   d) type & extension
8. File attributes consist of _____
   a) name
   b) type
   c) identifier
   d) all of the mentioned
9. In the sequential access method, information in the file is processed _____
   a) one disk after the other, record access doesnt matter

b) **one record after the other**
c) one text document after the other
d) none of the mentioned

10. The direct access method is based on a _____ model of a file, as _____ allow random access to any file block.
a) magnetic tape, magnetic tapes
b) tape, tapes
c**) disk, disks**
d) all of the mentioned

11. Each _____ has its own index block.
a) partition
b) address
c) **file**
d) all of the mentioned

12. Indexed allocation _____ direct access.
a) **supports**
b) does not support
c) is not related to
d) none of the mentioned

13. A file control block contains the information about _____
a) file ownership
b) file permissions
c) location of file contents
d) **all of the mentioned**

14. The data structure used for file directory is called _____
a) mount table
b) **hash table**
c) file table
d) process table

15. A relative block number is an index relative to _____
a) **the beginning of the file**
b) the end of the file
c) the last written position in file
d) none of the mentioned

16. The index contains _____
a) names of all contents of file
b) pointers to each page
c) **pointers to the various blocks**
d) all of the mentioned

17. For large files, when the index itself becomes too large to be kept in memory?
a) index is called

b) **an index is created for the index file**
c) secondary index files are created
d) all of the mentioned

18. In which type of allocation method each file occupy a set of contiguous block on the disk?
a) **contiguous allocation**
b) dynamic-storage allocation
c) linked allocation
d) indexed allocation

19. If the block of free-space list is free then bit will _____
a) **1**
b) 0
c) any of 0 or 1
d) none of the mentioned

20. For a direct access file _____
a) there are restrictions on the order of reading and writing
b) **there are no restrictions on the order of reading and writing**
c) access is restricted permission wise
d) access is not restricted permission wise

21. The larger the block size, the _____ the internal fragmentation.
a) **greater**
b) lesser
c) same
d) none of the mentioned

22. An absolute path name begins at the _____
a) leaf
b) stem
c) current directory
d) **root**

23. A relative path name begins at the _____
a) leaf
b) stem
c) **current directory**
d) root

24. In a tree structure, when deleting a directory that is not empty?
a) The contents of the directory are safe
b) **The contents of the directory are also deleted**
c) contents of the directory are not deleted
d) none of the mentioned

25. When two users keep a subdirectory in their own directories, the structure being referred to is _____
a) tree structure
b) cyclic graph directory structure
c) two level directory structure
d) **acyclic graph directory**

26. A tree structure _____ the sharing of files and directories.
    a) allows
    b) may restrict
    c) **restricts**
    d) none of the mentioned

27. The operating system _____ the links when traversing directory trees, to preserve the acyclic structure of the system.
    a) considers
    b**) ignores**
    c) deletes
    d) none of the mentioned

28. When keeping a list of all the links/references to a file, and the list is empty, implies that _____
    a) the file has no copies
    b) **the file is deleted**
    c) the file is hidden
    d) none of the mentioned

29. When the suspended process is moved to the secondary storage. This process is called?
    a) process mix.
    b) **Swapping**
    c) Swap-In
    d) Swap-Out

30. To create a file _____
    a) allocate the space in file system
    b) make an entry for new file in directory
    c) **allocate the space in file system & make an entry for new file in directory**
    d) none of the mentioned