University of Mumbai

Examinations Summer 2022

Time: 2 hour 30 minutes Subject:OS Max. Marks: 80

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Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1	The operating system acts as an interface between
Option A:	User and software
Option B:	User and hardware
Option C:	Software and hardware
Option D:	Kernal and hardware
2	Belady's anomaly is present in
Option A:	LRU
Option B:	FIFO
Option C:	Optimal
Option D:	MRU
3	In paging, a process is devided into number of _____
Option A:	Frames
Option B:	Pages
Option C:	Segments
Option D:	Blocks
4	Unit of a process is known as a
Option A:	Thread
Option B:	Unifier
Option C:	Module
Option D:	Segment
5	In segmentation, each process maintains a segment _____
Option A:	Section
Option B:	Table
Option C:	Number
Option D:	Address
6	MMU is responsible to
Option A:	Convert LA to PA
Option B:	Convert PA to LA
Option C:	Convert memory to bits
Option D:	Store memory in secondary memory
7	I/O buffering is used to avoid the risk of
Option A:	Deadlock
Option B:	Single process deadlock
Option C:	Multiple deadlocks
Option D:	Page fault
8	_____ selects the request with the least seek time from the current head position.
Option A:	SSTF
Option B:	FCFS
Option C:	C-SCAN

Option D:	C-LOOK
9	In which technique the file allocation table contains a separate one-level index for each file; the index has one entry for each portion allocated to the file
Option A:	Sequential allocation
Option B:	Indexed allocation
Option C:	Contiguous allocation
Option D:	Linked allocation
10	In which mechanism the user program or application programs can request some service form the OS.
Option A:	Service call
Option B:	System call
Option C:	Context switching
Option D:	Fork call
11	_____ runs in a kernel mode and rest runs as ordinary user processes.
Option A:	Monolithic
Option B:	Microkernel
Option C:	Layered architecture
Option D:	Mosmolithic
12	Whenever a process is created, an OS maintains a _____
Option A:	FCB
Option B:	PCB
Option C:	TCB
Option D:	LCB
13	What does implies saving the context of the old process and loading the context of a new process which is scheduled for execution
Option A:	Context switching
Option B:	Paging
Option C:	Segmentation
Option D:	Task switching
14	Which scheduler is responsible for admitting a process into the system hence it controls the degree of multiprogramming.
Option A:	Long term
Option B:	Short term
Option C:	Medium term
Option D:	None of the above
15	It is the time required by the process from its submission till its completion.
Option A:	Turn around time
Option B:	CPU utilization
Option C:	Burst time
Option D:	Arrival time
16	Which of the following is preemptive algorithm?
Option A:	SJF
Option B:	FCFS
Option C:	Priority
Option D:	Round robin
17	When the process is kept away from the processor for an indefinitely long interval of time is known as
Option A:	Aging
Option B:	Starvation

Option C:	Scheduling
Option D:	Execution
18	Whenever several processes access and manipulate the shared data concurrently and the outcome is dependent on the order in which they are executed is called _____ condition
Option A:	Race
Option B:	PCP
Option C:	Context
Option D:	Switching
19	Which of the following is not the permission of the file?
Option A:	Execute
Option B:	Read
Option C:	Write
Option D:	Create
20	Identify the the storage of the file where data is stored in the order as it is arriving
Option A:	Sequential files
Option B:	Pile
Option C:	Indexed
Option D:	Linked

Q2	Solve any Two Questions out of Three	
A	<table><tr><th>Process</th><th>Burst time</th><th>Priority</th></tr><tr><td>P1</td><td>2</td><td>2</td></tr><tr><td>P2</td><td>1</td><td>1</td></tr><tr><td>P3</td><td>8</td><td>4</td></tr><tr><td>P4</td><td>4</td><td>5</td></tr><tr><td>P5</td><td>5</td><td>3</td></tr></table> Consider the above set of processes , assuming all are arriving at time 0. Calculate average waiting time and turn around time for FCFS, SJF and Priority and RR (Time Quantum=2)	10
B	Explain Banker's algorithm in detail with example.	10
C	What is paging? Explain LRU, FIFO and Optimal page replacement policy for the following string. Page frame size is 4 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2	10

Q3	Solve any Two Questions out of Three	
A	What is system call? Explain five system calls in detail.	10
B	Explain various file allocation techniques.	10
C	Explain the need of I/O buffering and their types.	10

Q4	Solve any Two Questions out of Three	
A	Explain disk scheduling algorithms in detail	10
B	What is deadlock? Explain the necessary and sufficient conditions for a deadlock to occur. What is the difference between deadlock avoidance and prevention?	10
C	Write a short note on (Any 2) 1.Schedulers	10

	2.Readers-writers problem using semaphore 3.Monolithic and microlithic kernel 4.Mutual exclusion and its significance	