Reg. No.																

Question Paper Code	13046

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024

Fourth Semester

Computer Science and Business Systems

20CBPC403 - OPERATING SYSTEMS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (20 × 1 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	What is the maximum length of the filename in DOS? (a) 4 (b) 5 (c) 8 (d) 1	1	K1	CO1
2.	When were MS windows operating systems proposed? (a) 1994 (b) 1990 (c) 1992 (d) 1985	1	K1	CO1
3.	When does page fault occur? (a) The page is present in memory. (b) The deadlock occurs. (c) The page does not present in memory. (d) The buffering occurs.	1	K1	CO1
4.	BIOS is used by _____ (a) operating system (b) compiler (c) interpreter (d) application software	1	K1	CO1
5.	Which of the following scheduling algorithm is non preemptive (a) Shortest-Job-First Scheduling (b) First-Come, First-Served Scheduling (c) Priority Scheduling (d) Round-Robin Scheduling	1	K1	CO2
6.	Which of the following scheduling algorithm associates with each process the length of the process's next CPU burst (a) Shortest-Job-First Scheduling (b) First-Come, First-Served Scheduling (c) Priority Scheduling (d) Round-Robin Scheduling	1	K1	CO2
7.	Which of the following scheduling method would be the appropriate shortest-next CPU-burst algorithm? (a) Round-Robin Scheduling (b) First-Come, First-Served Scheduling (c) Priority Scheduling (d) Shortest-Job-First Scheduling	1	K1	CO2
8.	Which of the following scheduling algorithm is used frequently in long-term scheduling (a) Shortest-Job-First Scheduling (b) First-Come, First-Served Scheduling (c) Priority Scheduling (d) Round-Robin Scheduling	1	K1	CO2
9.	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 section and data section	1	K1	CO3
10.	Which of the following Multithreading model, the entire process will block if a thread makes a blocking system call. (a) Many to One model (b) One to Many model (c) Many to Many model (d) One to One model	1	K1	CO3
11.	A process can be (a) single threaded (b) multithreaded (c) both single threaded and multithreaded (d) none of the above	1	K1	CO3
12.	User threads (a) are supported above the kernel and are managed without kernel support (b) are supported below the kernel and are managed without kernel support (c) are supported above the kernel and are managed with kernel support (d) None of the above	1	K1	CO3

13.	For which of the below allocation is managed by Kernel and use of the allocated memory is managed by run time library? (a) Caches (b) RAM (c) Disk (d) All of the above	*1*	*K1*	*CO4*
14.	The effective memory access time depends on a (a) Miss Ratio (b) Hit Ratio (c) Bit Ratio (d) Byte Ratio	*1*	*K1*	*CO4*
15.	The kernel may decide keeping part of each process's address spaces in memory. it is achieved by part of memory hierarchy called____ (a) Caches (b) Disk (c) RAM (d) Virtual memory	*1*	*K1*	*CO4*
16.	During operation, a process creates data structures within the memory already allocated to it by the kernel, This function is actually performed by the____ (a) Run time library (b) dynamic library (c) static library (d) load time library	*1*	*K1*	*CO4*
17.	In which of the following a sequence of characters organized into lines (and possibly pages)? (a) Text file (b) Source file (c) Executable file (d) None of the above.	*1*	*K1*	*CO5*
18.	Which of the following file attribute is the unique tag, usually a number, identifies the file within the file system? (a) Name (b) Identifier (c) Size (d) Location	*1*	*K1*	*CO5*
19.	Which of the following file attribute Access-control information determines who can do reading, writing, executing, and so on? (a) Protection (b) identifier (c) Type (d) Time, date, and user identification	*1*	*K1*	*CO5*
20.	Which of the following is a named collection of related information that is recorded on secondary storage and is the smallest allotment of logical secondary storage? (a) Directory (b) File (c) Disk (d) All of the above	*1*	*K1*	*CO5*

PART - B (10 × 2 = 20 Marks)

Answer ALL Questions

21.	Compare and contrast warm and cold booting.	*2*	*K2*	*CO1*
22.	What are the different types of multiprocessing?	*2*	*K1*	*CO1*
23.	List four situations under which CPU scheduling decisions take place.	*2*	*K1*	*CO2*
24.	Define Gantt chart.	*2*	*K1*	*CO2*
25.	Define multithreading.	*2*	*K1*	*CO3*
26.	What do you mean by mutation?	*2*	*K1*	*CO3*
27.	Compare and contrast logical and physical addresses.	*2*	*K2*	*CO4*
28.	What is Demand Paging?	*2*	*K1*	*CO4*
29.	What are the various file operations?	*2*	*K1*	*CO5*
30.	List the disadvantages in using a single directory.	*2*	*K1*	*CO5*

PART - C (6 × 10 = 60 Marks)

Answer ALL Questions

31.	a)	Explain the various system calls.	*10*	*K2*	*CO1*
		OR			
	b)	Contrast the functionality of system boot with respect to operating systems.	*10*	*K2*	*CO1*
32.	a)	Consider the following set of processes, with the length of the CPU burst time given in milliseconds. Draw the Gantt chart illustrating the execution of these processes using FCFS, SJF(preemptive), RR(time quantum=2), Priority. Calculate the average turn around time, average waiting time	*10*	*K2*	*CO2*

Process	Arrival Time	Burst time	Priority
P1	0	10	2
P2	1	6	3
P3	2	12	1
P4	3	15	4

OR

	b)	Relate the process states and process control block in detail.	*10*	*K2*	*CO2*

33.	a)	Explain deadlock and explain in detail about the methods of handling deadlocks.	*10*	*K2*	*CO3*

OR

	b)	What is Semaphore? Demonstrate Bounded Buffer Producer Consumer Problem using Semaphore.	*10*	*K2*	*CO3*

34.	a)	Explain paging scheme of memory management. What hardware support is needed for its implementation?	*10*	*K2*	*CO4*

OR

	b)	Discuss with an example, the following allocation algorithm. (i) First fit (ii) Best fit (iii) Worst fit	*10*	*K2*	*CO4*

35.	a)	Classify different Disk scheduling algorithms SCAN, CSCAN, CLOOK.	*10*	*K2*	*CO5*

OR

	b)	Explain in detail about file allocation methods.	*10*	*K2*	*CO5*

36.	a) i)	Compare paging with segmentation in terms of the amount of memory required by the address translation structures in order to convert virtual addresses to physical addresses.	*5*	*K2*	*CO4*
	ii)	Summarize different free space management techniques in detail.	*5*	*K2*	*CO5*

OR

	b) i)	Explain with neat diagram explain how logical address is translated into physical address.	*5*	*K2*	*CO4*
	ii)	Outline the following with appropriate diagrams a. Two level directory structure. b. Acyclic-graph directory structure.	*5*	*K2*	*CO5*