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Enrollment No.....



Faculty of Engineering
End Sem (Even) Examination May-2019
CS3CO09 / IT3CO21 Operating System
Programme: B.Tech. Branch/Specialisation: CSE/IT

Duration: 3 Hrs.

Maximum Marks: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1 i. Instructions which won't appear in the object program are called as _____. 1
(a) Redundant instructions (b) Exceptions
(c) Comments (d) Assembler Directives
- ii. For real time operating systems, interrupt latency should be 1
(a) Minimal (b) Maximum
(c) Zero (d) Dependent on the scheduling
- iii. The processes that are residing in main memory and are ready and waiting to execute are kept on a list called 1
(a) Job queue (b) Ready queue
(c) Execution queue (d) Process queue
- iv. In priority scheduling algorithm 1
(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 these
- v. Which one of the following is the address generated by CPU? 1
(a) Physical address (b) Absolute address
(c) Logical address (d) None of these
- vi. Run time mapping from virtual to physical address is done by 1
(a) Memory management unit
(b) CPU
(c) PCI
(d) None of these

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- vii. Because of virtual memory, the memory can be shared among **1**
 (a) Processes (b) Threads
 (c) Instructions (d) None of these
- viii. In FIFO page replacement algorithm, when a page must be replacing **1**
 (a) Oldest page is chosen (b) Newest page is chosen
 (c) Random page is chosen (d) None of these
- ix. The set of tracks that are at one arm position make up a _____ **1**
 (a) Magnetic disks (b) Electrical disks
 (c) Assemblies (d) Cylinders
- x. The host controller is: **1**
 (a) Controller built at the end of each disk
 (b) Controller at the computer end of the bus
 (c) All of these
 (d) None of these
- Q.2 i. Write down different type of operating systems. **2**
 ii. Write a brief description on macros and macro processors. **3**
 iii. Explain time-sharing operating system with a suitable example. **5**
- OR iv. Write difference between distributed and parallel operating system. **5**
- Q.3 i. What is a process scheduler? **2**
 ii. Explain: **8**
 (a) Precedence Graphs (b) Critical Section Problem
 (c) Semaphores (d) Threads
- OR iii. Explain the process states with diagram and also explain process control block. **8**
- Q.4 i. Write down different type of memory management techniques. **3**
 ii. Explain fixed and dynamic partitions also Explain best fit, first fit and worst fit allocation with the example. **7**
- OR iii. Consider a system with byte-addressable memory, 32-bit logical addresses, 4 kilobyte page size and page table entries of 4 bytes each. calculate size of the page table in the system in megabytes. **7**
- Q.5 i. Explain page replacement algorithms and allocation of frames. **4**

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- ii. What is the concept of virtual memory and cache memory. **6**
- OR iii. Explain the role of operating system in security and security breaches. **6**
- Q.6 Attempt any two:
- i. Consider a disk with 200 tracks and the queue has random requests **5**
 from different processes in the order:
 55, 58, 39, 18, 90, 160, 150, 38, 184
 Initially arm is at 100. Find the Average Seek length using FCFS.
- ii. What is the role of file manager and file organization? Also explain access methods. **5**
- iii. What are the file sharing implement issues and explain file management in linux? **5**

Marking Scheme
CS3CO09 / IT3CO21 Operating System

Q.1	i.	Instructions which won't appear in the object program are called as_____.	1
		(d) Assembler Directives	
	ii.	For real time operating systems, interrupt latency should be	1
		(a) Minimal	
	iii.	The processes that are residing in main memory and are ready and waiting to execute are kept on a list called	1
		(b) Ready queue	
	iv.	In priority scheduling algorithm	1
		(a) CPU is allocated to the process with highest priority	
	v.	Which one of the following is the address generated by CPU?	1
		(c) Logical address	
	vi.	Run time mapping from virtual to physical address is done by	1
		(a) Memory management unit	
	vii.	Because of virtual memory, the memory can be shared among	1
		(a) Processes	
	viii.	In FIFO page replacement algorithm, when a page must be replacing	1
		(a) Oldest page is chosen	
	ix.	The set of tracks that are at one arm position make up a _____	1
		(d) Cylinders	
	x.	The host controller is:	1
		(b) Controller at the computer end of the bus	
Q.2	i.	At least 4 different type of operating systems.	2
		0.5 mark for each (0.5 mark * 4)	
	ii.	Macros and macro processors.	3
		1.5 marks for each (1.5 marks * 2)	
	iii.	Time-sharing operating system	5
		Explanation	3 marks
		Example.	2 marks
	OR iv.	At least five difference b/w distributed and parallel operating system.	5
		1 mark for each difference (1 mark * 5)	
	Q.3 i.	Process scheduler	2
	ii.	(a) Precedence Graphs	2 marks
		(b) Critical Section Problem	2 marks
		(c) Semaphores	2 marks
		(d) Threads	2 marks

OR	iii.	Process states with diagram	8
		Explanation	2 marks
		Diagram	2 marks
		Process control block.	
		Explanation	2 marks
		Diagram	2 marks
Q.4	i.	At least three different type of memory management techniques.	3
		1 mark for each difference (1 mark * 3)	
	ii.	Fixed and dynamic partitions	7
		Best fit, first fit and worst fit allocation with the example.	
		1 mark for each (1 mark * 3)	3 marks
	OR iii.	Calculate size of the page table in the system in megabytes.	7
		Formula	2 marks
		Steps	3 marks
		Answer after conversion	2 marks
Q.5	i.	Page replacement algorithms	4
		Allocation of frames.	2 marks
	ii.	Concept of virtual memory	6
		Concept of cache memory.	3 marks
OR	iii.	Role of operating system in security	6
		Role of operating system in security breaches.	3 marks
Q.6		Attempt any two:	
	i.	Find the Average Seek length using FCFS.	5
		Proper head moment	3 marks
		Solution	2 marks
	ii.	Role of file manager and file organization	5
		1 mark for each (1 mark * 2)	2 marks
		Access methods	3 marks
	iii.	File sharing implement issues	5
		File management in Linux	2.5 marks
			2.5 marks
