

Total No. of Questions: 6

Total No. of Printed Pages:3

Enrollment No.....



Faculty of Engineering
End Sem (Even) Examination May-2019
CA5CO06 Operating System
Programme: MCA Branch/Specialisation: Computer Application

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. The basic type of OS is **1**
(a) Batch and time sharing (b) Sequential and Time sharing
(c) Direct and interactive (d) Batch and interactive
- ii. To access the services of operating system, the interface is **1**
provided by the
(a) System calls (b) API
(c) Library (d) Assembly instructions
- iii. A memory buffer used to accommodate a speed differential is **1**
called
(a) Stack pointer (b) Cache
(c) Accumulator (d) Disk buffer
- iv. Swapping requires a _____ **1**
(a) Motherboard (b) Keyboard
(c) Monitor (d) Backing store
- v. Inter process communication: **1**
(a) Allows processes to communicate and synchronize their actions when using the same address space.
(b) Allows processes to communicate and synchronize their actions without using the same address space.
(c) Allows the processes to only synchronize their actions without communication
(d) None of these

P.T.O.

[2]

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| vi. | If the wait for graph contains a cycle: | 1 |
| | (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 | |
| vii. | To create a file | 1 |
| | (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 these | |
| viii. | Whenever a process needs I/O to or from a disk it issues a _____ | 1 |
| | (a) System call to the CPU | |
| | (b) System calls to the operating system | |
| | (c) A special procedure | |
| | (d) All of these | |
| ix. | A process can be | 1 |
| | (a) Single threaded (b) Multithreaded | |
| | (c) Both (a) and (b) (d) None of these | |
| x. | When the event for which a thread is blocked occurs, | 1 |
| | (a) Thread moves to the ready queue | |
| | (b) Thread remains blocked | |
| | (c) Thread completes | |
| | (d) A new thread is provided | |
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| Q.2 | i. | List out different services of Operating Systems. | 2 |
| | ii. | Define Operating Systems and discuss its role from different perspectives. | 3 |
| | iii. | What do you mean by PCB? Where is it used? What are its contents? Explain | 5 |
| OR | iv. | Explain the difference between long term and short term and medium-term schedulers. | 5 |
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| Q.3 | i. | Explain swapping. | 2 |
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| | ii. | Consider the reference stream
1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.
How many page faults while using FIFO and LRU using 2 frames? | 8 |
| OR | iii. | Explain Page replacement algorithm with example. | 8 |
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| Q.4 | i. | Explain solution to the Critical Section Problem. | 3 |
| | ii. | Define IPC. What are different methods used for logical implementations of message passing systems. | 7 |
| OR | iii. | Why is deadlock state more critical than starvation? Describe resource allocation graph with a deadlock, with a cycle but no deadlock. | 7 |
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| Q.5 | i. | Define File Structure. List types of File used by MS-DOS and UNIX. | 4 |
| | ii. | Describe various file access methods. | 6 |
| OR | iii. | Explain various disk scheduling algorithms? | 6 |
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| Q.6 | | Attempt any two: | |
| | i. | Compare and contrast single-threaded and multi-threaded process. | 5 |
| | ii. | Explain about directory structure? | 5 |
| | iii. | Explain in detail the file system in LINUX system | 5 |

Marking Scheme CA5CO06 Operating System

Q.1	i.	The basic type of OS is	1
		(d) Batch and interactive	
	ii.	To access the services of operating system, the interface is provided by the	1
		(a) System calls	
	iii.	A memory buffer used to accommodate a speed differential is called	1
		(a) Stack pointer	
	iv.	Swapping requires a _____	1
		(d) Backing store	
	v.	Inter process communication:	1
		(b) Allows processes to communicate and synchronize their actions without using the same address space.	
	vi.	If the wait for graph contains a cycle:	1
		(b) Then a deadlock exists	
	vii.	To create a file	1
		(c) Allocate the space in file system & make an entry for new file in directory	
	viii.	Whenever a process needs I/O to or from a disk it issues a _____	1
		(b) System calls to the operating system	
	ix.	A process can be	1
		(c) Both (a) and (b)	
	x.	When the event for which a thread is blocked occurs,	1
		(a) Thread moves to the ready queue	
Q.2	i.	Services of Operating Systems.	2
		For Four Services	1 mark
		For Six and above	+ 1 mark
	ii.	Definition of Operating Systems	1 mark
		Role from different perspectives.	2 marks
OR	iii.	Meaning of PCB	2 marks
		Used and Contents	3 marks
	iv.	Difference b/w long term, short term and medium-term schedulers.	5
		Difference 1 mark for each	(1 mark * 5)
Q.3	i.	Swapping.	2
	ii.	FIFO	4 marks
		LRU	4 marks

OR	iii.	Explanation of PRA	2 marks	8
		The First-in-First-out Algorithm (FIFO)	2 marks	
		The Optimal Algorithm	2 marks	
		LRU page replacement algorithm	2 marks	
Q.4	i.	Explanation of critical section	1 mark	3
		Mutual Exclusion, Progress and Bounded Waiting	2 marks	
	ii.	Definition IPC	3 marks	7
		Message Passing Method	4 marks	
OR	iii.	Explanation for starvation	3 marks	7
		Describe resource allocation graph	4 marks	
	Q.5	Definition of File Structure	1 mark	4
		List types of File	3 marks	
	ii.	File access methods		6
		Sequential Access	2 marks	
		Direct Access	2 marks	
	iii.	Index sequential Method	2 marks.	6
		Disk scheduling algorithms		
		Explanation FCFS	1 mark	
	Q.6	SSTF	1 mark	5
		SCAN	1 mark	
		CSCAN	1 mark	
		LOOK	1 mark	
	i.	CLOOK	1 mark	5
		Attempt any two:		
		Single-threaded and multi-threaded process.		
	ii.	Compare and contrast 1 mark for each	(1 mark * 5)	5
		Directory structure		
		Single-level directory	1 mark	
	iii.	Two-level directory	1 mark	5
		Tree-structured directory	1 mark	
		Acyclic graph directory	1 mark	
	File system in LINUX system	General graph directory structure	1 mark	5
		Explanation	2 marks	
		Diagram	1 mark	
		Components	2 marks	
