

Scheme of Valuation

14CS 304

Hall Ticket Number:

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II/IV B.Tech (Regular) DEGREE EXAMINATION

November, 2016

Computer Science & Engineering

Third Semester

Operating Systems

Time: Three Hours

Maximum : 60 Marks

Answer Question No.1 compulsorily.

(1X12 = 12 Marks)

Answer ONE question from each unit.

(4X12=48 Marks)

1	Answer all questions	(1X12=12 Marks)
	a) What is an operating system?	1M
	b) Define a thread.	1M
	c) What is a semaphore?	1M
	d) What is a safe state?	1M
	e) Define a dirty bit.	1M
	f) What is thrashing?	1M
	g) List out file operations.	1M
	h) Define a directory.	1M
	i) Distinguish between seek time and latency time.	1M
	j) What is the role of device controller?	1M
	k) What is a free-space management?	1M
	l) What is compaction?	1M
UNIT I		
2	a) Explain about the Evolution of operating systems. Briefly explain any 4 of the following i) Serial Processing ii) Batch Processing iii) Multiprogramming iv) Timesharing v) Real-Time vi) Parallel Processing vii) Distributed Processing	6M
	b) What are the main functions of Operating System? Explain them Briefly explain the following i) Processor Management ii) Memory Management iii) I/O Management iv) File Management	6M
(OR)		
3	a) Define a Process. Describe Process State transition diagram with a neat sketch. Definition of a process 2M Diagram 2M Description of States 2M	6M
	b) List and describe different types of schedulers. Three type i) Long-term Scheduler ii) Medium-term Scheduler iii) Short-term Scheduler 3X2 = 6M	6M
UNIT II		
4	a) Compare preemptive Scheduling and non-preemptive scheduling. Preemptive Scheduling 3M	6M

		Non-preemptive 3M																			
	b)	<div>Consider the following set of processes, with the length of the CPU burst given in milliseconds:</div> <table><thead><tr><th>Process</th><th>CPU Burst Time</th><th>Priority</th></tr></thead><tbody><tr><td>P1</td><td>10</td><td>3</td></tr><tr><td>P2</td><td>1</td><td>1</td></tr><tr><td>P3</td><td>2</td><td>3</td></tr><tr><td>P4</td><td>1</td><td>4</td></tr><tr><td>P5</td><td>5</td><td>2</td></tr></tbody></table> <div>The processes are assumed to have arrived in the order P1, P2/ P3, P4, P5, all at time 0.</div> <div><div>i. Draw four Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: FCFS, SJF, non-preemptive priority (a smaller priority number implies a higher priority), and RR (quantum = 1).</div><div>ii. What is the turnaround time of each process for each of the scheduling algorithms in part i?</div><div>iii. What is the waiting time of each process for each of the scheduling algorithms in part i?</div></div> <div>3X2 =6M</div>	Process	CPU Burst Time	Priority	P1	10	3	P2	1	1	P3	2	3	P4	1	4	P5	5	2	6M
Process	CPU Burst Time	Priority																			
P1	10	3																			
P2	1	1																			
P3	2	3																			
P4	1	4																			
P5	5	2																			
(OR)																					
5	a)	<div>Explain the concept of Monitors.</div> <div>Definition of monitor 2M</div> <div>Concept of it with example 4M</div>	6M																		
	b)	<div>Write and explain Producer - Consumer classical synchronization problem.</div> <div>Algorithm 4M</div> <div>Explanation 2M</div>	6M																		
UNIT III																					
6	a)	Describe First-fit, Best-fit and Worst-fit algorithms 3X2=6M	6M																		
	b)	<div>Describe necessary conditions for deadlock occurrence.</div> <div>Need to explain the following</div> <div><div>i) Mutual exclusion</div><div>ii) Hold & Wait</div><div>iii) No preemption</div><div>iv) Circular wait</div></div>	6M																		
(OR)																					
7	a)	<div>Describe the demand-paging Memory Management technique.</div> <div>Concept of it and explanation with neat diagrams</div>	6M																		
	b)	<div>Describe Page Replacement algorithms with an example.</div> <div>Need to explain the following with examples</div> <div><div>i) FIFO</div><div>ii) LRU</div><div>iii) Optimal 3X2=6M</div></div>	6M																		
UNIT IV																					
8	a)	<div>What is a file? What are the different operations that can be performed on a file?</div> <div>Definition of file wit its importance</div>	6M																		
	b)	Discuss in detail about file accessing methods.	6M																		
(OR)																					
9		<div>Explain the following.</div> <div><div>i)Application I/O interface</div><div>ii) Kernel I/O subsystem</div></div>	12 M																		