Scheme of Valuation

14CS 304

Hall Ticket Number:

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)	Consider the following set of processes, with the length of the CPU burst given in milliseconds: The processes are assumed to have arrived in the order P1, P2/ P3, P4, P5, all at time 0. 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). ii. What is the turnaround time of each process for each of the scheduling algorithms in part i? iii. What is the waiting time of each process for each of the scheduling algorithms in part i? 3X2 =6M	6M

Process	CPU Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

		(OR)	
5	a)	Explain the concept of Monitors. Definition of monitor 2M Concept of it with example 4M	6M
	b)	Write and explain Producer - Consumer classical synchronization problem. Algorithm 4M Explanation 2M	6M
		UNIT III	
6	a)	Describe First-fit, Best-fit and Worst-fit algorithms 3X2=6M	6M
	b)	Describe necessary conditions for deadlock occurrence. Need to explain the following i) Mutual exclusion ii) Hold & Wait iii) No preemption iv) Circular wait	6M
		(OR)	
7	a)	Describe the demand-paging Memory Management technique. Concept of it and explanation with neat diagrams	6M
	b)	Describe Page Replacement algorithms with an example. Need to explain the following with examples i) FIFO ii) LRU iii) Optimal 3X2=6M	6M
		UNIT IV	
8	a)	What is a file? What are the different operations that can be performed on a file? Definition of file wit its importance	6M
	b)	Discuss in detail about file accessing methods.	6M
		(OR)	
9		Explain the following. i)Application I/O interface ii) Kernel I/O subsystem	12 M