Department of Computer Science and Engineering
Institute of Technical Education & Research, SOA Deemed to be University

THEORY ASSIGNMENT-2018

Operating System (CSE 4041)

Programme: B.Tech. (CSE & CSIT)

Semester: 6th

Posted on: 20/03/2018

Marks: 10

Submission Date: 24/03/2018

Time:

Course Outcome	*Taxonomy Level	Question Number	Marks
Identify and define key terms related to operating systems.	L1, L2, L5	1a, 2b	
Analyze and Implement UNIX files and process subsystems.			
Describe and classify different concepts related to for CPU scheduling, concurrency and control of concurrent programs and implement various strategies.	L3, L4, L6	2a, 2b, 2c	
Recognize and handling of deadlocks and memory management.	L2, L3, L4	3a, 3b, 3c	
Analyze, Measure, evaluate, and compare the performance of the operating system components and to apprise and define new components of OS.			

*Blooms taxonomy levels: Knowledge (L1), Comprehension (L2), Application (L3), Analysis (L4), Evaluation (L5), Creation (L6)

1. a. What are system calls ? Why system calls are needed ?
   b. Describe the various system calls used in “Process Management” in Unix OS ?

2. Consider the following set of processes, with the length of arrival time, CPU burst given in milliseconds:

	Arrival Time	Burst Time	Priority
P1	1	5	0
P2	4	6	1
P3	3	7	2
P4	0	9	4
P5	2	2	3

   a. Draw five Gantt charts that illustrate the execution of these processes using the following scheduling algorithm: FCFS, preemptive SJF, nonpreemptive SJF, preemptive priority (a smaller priority number implies higher priority), and RoundRobin (Time quantum = 2).

   b. What is the turn around time, waiting time of each of the process for each of the scheduling algorithm in part a ?

   c. Which of the algorithm results in the minimum average waiting time (overall processes) ?

3. Consider the following snapsort of a system:

	Allocation	Max	Available
	A B C D	A B C D	A B C D
P0	0 0 1 2	0 0 1 2	1 5 2 0
P1	1 0 0 0	1 7 5 0	
P2	1 3 5 4	2 3 5 6	
P3	0 6 3 2	0 6 5 2	
P4	0 0 1 4	0 6 5 6	

Answer the following questions using Banker's algorithm ?

   a. What is the content of the matrix Need ?
   b. Is the system in a safe state ?
   c. If a request from a process P1 arrives for (0,4,0,2) can the request be granted immediately ?