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B.E. MID-SEMESTER EXAMINATION AUGUST 2016

Date : 4/09/2015	**Branch : CE/IT**
Subject Name & Code: Operating System CE 503/IT 503	**Semester : 5**
Time : 8:30 AM TO 10:00 AM	**Max. Marks : 30**

Instructions:
1) All questions are **compulsory**.
2) Figures to the **right** indicate full marks.
3) Use of scientific calculator is permitted.
4) Indicate **clearly**, the options you attempt along with its respective question number.
5) Use the last page of main supplementary for **rough work**.

Marks

Q.1 **(A)** List the types of operating systems and explain any one in detail **[5]**

(B) What is Mutex? Write a pseudo code to achieve mutual exclusion using Mutex. **[5]**
OR
(B) Explain system call and types of system calls in detail. **[5]**

Q.2 **(A)** Define a process. Explain the process state transition with a neat diagram. **[5]**

(B) Explain the IPC Problem known as Dining Philosopher problem. **[5]**
OR
(A) Explain the use of Banker's algorithm for multiple resources for deadlock avoidance with illustration. **[5]**
(B) What is critical section? What is Mutual exclusion? Explain Peterson's solution for mutual exclusion problem. **[5]**

Q.3 **(A)** Consider the Following set of Processes , with the length of the CPU-burst time given in milliseconds: **[5]**

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

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time=0.

(a) Draw Four Gantt charts illustrating the execution of these processes using FCFS, SJF, non-preemptive Priority (a small priority number implies a higher priority) , and Round Robin (quantum =1) scheduling.

(b) What is the average waiting time of all processes for each of the scheduling algorithms in part a ?

(c) What is the average Turn around time of all processes for each of the scheduling algorithms in part a ?

(B) Explain the following UNIX commands [5]
(i) grep (ii) cut (iii) chmod (iv) pwd

OR

Q.3 **(A)** Explain recovery from deadlock. [5]

(B) Suppose that the following processes arrive for the execution at the times indicated. Each [5]
process will run the listed amount of time. Assume preemptive scheduling.

Process	Arrival Time(ms)	Burst Time(ms)
P1	0.0	8
P2	0.4	4
P3	1.0	1

What is the turnaround time for these processes with Shortest Job First scheduling
algorithm?