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B. Tech. (CSE) **Fourth *Semester***

Mid-Semester Examination ***(March 2018)***

CO204 OPERATING SYSTEMS DESIGN

Time: 1.5 hrs *Max. Marks: 30*

Note: ***Answer all questions. Assume suitable missing data if any.***

Q1. a) How does an operating system work as a resource manager and a vertical machine? **2.5**

b) What are the advantages of a multiprocessor system? **2.5**

Q2. What is a Process? Explain PCB using a suitable example. **5**

Q3. Differentiate between the following: **(2.5X2=5)**

a) Multiprogramming and Multitasking

b) Multilevel Queue Scheduling and Multilevel Feedback Queue Scheduling algorithms

Q4.a) A Shortest Job First algorithm may lead to starvation where a process with large execution time is made to wait for indefinitely long times. Suggest a modification to the SJF that overcomes this problem. **1.5**

b) What happens if the time allocated in a Round Robin Scheduling is very large? And what happens if the time allocated is very low? **1.5**

c) Assume you have the following jobs to execute with one processor, with the jobs arriving in the order listed here:

P.T.O.

i	T(pi)
0	80
1	20
2	10
3	20
4	50

Suppose a system uses FCFS scheduling. Create a Gantt chart illustrating the execution of these processes? What is the turnaround time for process p3?. What is the average wait time for the processes? **2**

Q5. What is a race condition? What are the solution requirements for critical section problem? Illustrate using example. **5**

Q6.Explain the following concepts: **(2.5X2=5)**

a) Necessary and Sufficient conditions for a deadlock

b) System calls for process management

END