United College of Engineering and Research, Allahabad
Department of Computer Science & Information Technology
Ist Sessional Examination (2017-18)
B.Tech. (IVth Semester (CS & IT))
Operating Systems

Subject Code: RCS 401

Time: 2.00 hours **Max. Marks:** 40

Note: There are three sections in this paper. All sections are compulsory.

Section-A

Note: All questions are **compulsory**. Each question has equal marks. **10*1=10**

1. Define Operating System with examples?
2. Define Turn Around Time.
3. What is Dispatcher?
4. What is the main difficulty that a programmer must overcome in writing an operating system for real time environment?
5. What is soft real time operating system?
6. In what way is shortest job first scheduling just a particular form of priority scheduling?
7. Differentiate between long term and short term scheduler?
8. If a process is in running state, what are the conditions in which process returns back to ready queue?
9. What are the advantages of multiprogramming?
10. What is meant by context switching?

Section-B

Note: Attempt any **five** questions. Each question has equal marks. **5*3=15**

1. Explain the difference between single threaded and multi threaded process with appropriate diagram?
2. Explain the difference between following scheduling algorithms. (1) SJF (2) SRTF
3. Explain the use of various fields of Process Control Block?
4. List at least 5 functions provided by operating system.
5. Differentiate between the following operating system
   (a) Multiprocessor and multitasking
   (b) Timesharing and Batch system
6. Describe the structure of a process in memory and process state diagram?

Section-C

Note: Attempt any **two** questions. Each question has equal marks. **2*7.5=15**

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

Process	Arrival time	Burst Time	Priority
P1	0	10	3
P2	1	1	1
P3	2	2	3
P4	3	1	4
P5	4	5	2

The processes are assumed to have arrived in order P1, P2, P3, P4, P5.

1. Draw four Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: FCFS, SRTF, preemptive priority (a smaller priority number implies a higher priority), and RR (quantum=2).
2. What is the turnaround time of each process for each of the scheduling algorithms in part 1?
3. What is the waiting time for each process for each of the scheduling algorithm in part 1?