Motilal Nehru National Institute of Technology
Department of Computer Science & Engineering
Mid Term Examination 2017-18

Subject- Operating System (CA 1502), MCA- 3th Sem.

Duration- 1:30 h **Max. Marks:20**

Attempt all questions. Assume if something missing.

1. Our discussion of process states and the corresponding event queues maintained by the operating system suggests that a process can only be in one event queue at a time. **(2+2)**
   a) Is it possible that you would want to allow a process to wait on more than one event at the same time? Provide an example.
   b) In that case, how would you modify the queuing structure to support this new feature?

2. Consider the seven processes with arrival time and burst time as per scenario given below. Consider the Highest Response Ratio Next (HRN) scheduling algorithm. Compute the average waiting time, average turn around time and throughput of the algorithm. **(2+2+1)**

Processes	Arrival Time	Burst Time	Priority
P0	0	6	3
P1	1	3	2
P2	2	7	5
P3	3	4	1 (highest)
P4	5	3	4
P5	6	5	7 (Lowest)
P6	8	6	6

3. In the discussion of user level threads (ULTs) versus kernel level threads (KLTs), it was pointed out that a disadvantage of ULTs is that when a ULT executes a system call, not only is that thread blocked, but also all of the threads within the process are blocked. Why is that so? **(2)**

4. What is the difference between interrupt and a trap? Discuss atleast three example of interrupt. Also, discuss the general categories of information in process control block (PCB). **(1+2+2)**

5. Many current language specifications, such as for C and C++, are inadequate for multithreaded programs. This can have an impact on compilers and the correctness of code, as this problem illustrates. Consider the following declarations and function definition: