Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

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V SEMESTER B.TECH. (COMPUTER SCIENCE AND ENGINEERING)
INSEMESTER EXAMINATIONS, DEC 2021
SUBJECT: Operating Systems [CSE 3153]
REVISED CREDIT SYSTEM
(10/12/2021), 4 PM – 5:30 PM

Time: 1 Hour 30 Minutes MAX. MARKS: 20

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitably assumed.

1 Compare and contrast the differences between different modes in operating system operation. Also, illustrate how modes in operating system operation protect the operating system from errant users. **3M**

2 Consider the following set of processes, arriving at the given times and having the following CPU burst time and priorities: **3M**

Process	Burst Time	Priority
P1	6	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The process has arrived in the order P1, P2, P3, P4, P5 all at time 0. Draw the Gantt charts for the execution of these processes using SJF, priority and RR (quantum=2) scheduling. What is the waiting time of each process for each of the scheduling algorithm?

3 Discuss the states of a process. Illustrate how CPU switches from a process to process with a diagram. **3M**

4 A system has 12 resources of A type, 14 resources of B type and 15 resources of C type. Apply Banker's algorithm and check whether the system is safe using Bankers algorithm **3M**

Processes	MAX			Allocation			Available		
	A	B	C	A	B	C	A	B	C
P1	8	7	5	2	3	4	?	?	?
P2	7	4	4	4	2	3			
P3	2	5	5	1	4	4			
P4	5	5	4	3	3	4			

5 Illustrate with example different data structures used in Banker's algorithm. **4M**

6	Discuss the benefits and drawbacks of the multithreading models with neat diagrams.	**4M**