CLASS: **IMSc**	SEMESTER: VI
BRANCH: **MATHEMATICS**	SESSION : SP/2020

SUBJECT : CS4107 OPERATING SYSTEM

TIME: **1.5 HOURS**	FULL MARKS: 25

INSTRUCTIONS:
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

Q1 (a) What are the goals of an operating system?   [2]
    (b) An operating system is a resource allocator, control program. Justify.   [3]

Q2 (a) Buffering and spooling are the techniques to improve CPU utilization. Justify   [2]
    (b) As per user view of operating systems, OS can provide services to the user by means of [3]
         System calls and System programs. What sort of difficulty would occur if an OS is
         extending all kinds of services to the user by means of System calls only? Justify your
         answer.

Q3 (a) A user program occupying 12MB of space in the storage device needs to be executed on [2]
         to a computer system that uses an assembler/compiler that can process the code at the
         rate of 3MB/Sec. If the data transfer rate of storage device is 24MB/Min then what
         percent of time the CPU will remain idle?
    (b) Suggest at least two different methods by which an Operating System could keep track [3]
         of currently unallocated blocks.

Q4 (a) What are the file access methods that operating systems provide to the user?   [2]
    (b) Compare contiguous allocation method with linked allocation method of files in terms of [3]
         access to the content of file. Also comment on demerits of these two file allocation
         methods.

Q5 (a) Differentiate Turnaround time and waiting time.   [2]
    (b) Discuss short-term, mid-term and long-term schedulers with the help of a queueing   [3]
         diagram. Does all operating systems require to have mid-term schedular necessarily?

Q6 (a) State the Little's formula in the context of evaluating CPU scheduling.   [2]
    (b) Suppose that a scheduling algorithm (at the level of short-term CPU scheduling) favors [3]
         those processes that have used the least processor time in the recent past. Why will this
         algorithm favor I/O-bound programs and yet not permanently starve CPU-bound
         programs?

:::::: 26/02/2020 ::::::M