Sixth Semester B.E. Degree Examination, July/August 2021 Operating Systems

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- a. What is operating system? With diagram, explain the model of a computer system as viewed by an OS. (10 Marks)
 - o. Explain time sharing OS with respect to,
 - (i) Scheduling
 - (ii) Memory management.

(10 Marks)

- 2 a. Define the Microkernel. Explain its advantages. (06 Marks)
 - b. Explain the following:
 - (i) Resource preemption.
 - (ii) Spooling.

(08 Marks)

c. Explain the concept of VMOS, with example.

Explain the content of process control block.

(06 Marks)

3 a. Explain states and state transitions in processes.

(06 Marks) (06 Marks)

- c. Explain: (i) Kernel level threads.
 - (ii) User threads.

(08 Marks)

- 4 a. Explain: (i) Lazy buddy allocator
 - (ii) Merging free memory areas.

(10 Marks) (06 Marks)

- b. Explain internal fragmentation and external fragmentation, with examples.
- c. Compare the Contiguous and noncontiguous memory allocation.

(04 Marks)

5 a. With a neat diagram, explain the concept of demand paging.

- (10 Marks)
- b. Find the number of page faults for following page reference string, using the FIFO and LRU page replacement policies.

 Reference string: 5, 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5 (Assume page frames = 3). (10 Marks)

(08 Marks)

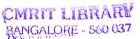
- 6 a. Explain file system and IOCs layers.
 - b. Explain linked allocation and indexed allocation.
 - e. Explain Unix file system.

- (08 Marks) (04 Marks)
- 7 a. What do you mean by non-preemptive and preemptive scheduling policies? Explain (i) LCN and (ii) STG policies. (08 Marks)
 - b. Explain mechanisms and policy modules of process scheduler.

(05 Marks)

c. Compute mean turn around time and weighted turn around time for following set of processes using FCFS scheduling.

Processes	P_1	P ₂	P_3	P ₄	P ₅
Arrival time	0	2 4	3)	5	8
Service time	3	3	2	5	3



(07 Marks)

- 8 a. What is a mail box? With an example, explain the features of mail boxes and its advantages.
 (10 Marks)
 - b. Discuss primary issues in message passing implementation.

(10 Marks)
