



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

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. What is operating system? With diagram, explain the model of a computer system as viewed by an OS. (10 Marks)
- b. 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. (08 Marks)
 - (ii) Spooling. (06 Marks)
- c. Explain the concept of VMOS, with example. (06 Marks)
- 3 a. Explain states and state transitions in processes. (06 Marks)
- b. Explain the content of process control block. (06 Marks)
- c. Explain: (i) Kernel level threads. (08 Marks)
- (ii) User threads.
- 4 a. Explain: (i) Lazy buddy allocator (10 Marks)
- (ii) Merging free memory areas.
- b. Explain internal fragmentation and external fragmentation, with examples. (06 Marks)
- 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. (10 Marks)
- Reference string : 5, 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5 (Assume page frames = 3).
- 6 a. Explain file system and IOCs layers. (08 Marks)
- b. Explain linked allocation and indexed allocation. (08 Marks)
- c. Explain Unix file system. (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	3	5	8
Service time	3	3	2	5	3

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(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)
