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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. (06 Marks)
 - b. Explain internal fragmentation and external fragmentation, with examples. (04 Marks)
 - c. Compare the Contiguous and noncontiguous memory allocation.
 - 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. (07 Marks)
- | 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 |
