10EC65

Sixth Semester B.E. Degree Examination, Feb./Mar. 2022
Operating Systems

Time: 3 hrs.   Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART – A

1 a. What are the goals of an OS? Mention the common tasks performed by an OS and indicate when they are performed. **(07 Marks)**
   b. Describe the batch processing system along with its turn-around time. **(05 Marks)**
   c. Briefly explain the benefits and special techniques used in distributed OS. **(08 Marks)**

2 a. What is semantic gap in Monolithic OS structure? How is it addressed in layered OS design? **(07 Marks)**
   b. Explain the concept of kernel based OS and list the typical functions offered by the kernel. **(07 Marks)**
   c. With a neat diagram, explain the working of a microkernel based OS. **(06 Marks)**

3 a. What is a process? Explain the contents of a process control block. **(06 Marks)**
   b. What are the fundamental states of a process and explain the process-state transition diagram. **(06 Marks)**
   c. Compare threads and processes. Explain kernel level threads. **(08 Marks)**

4 a. Compare contiguous and noncontiguous memory allocation methods. **(05 Marks)**
   b. Explain the techniques used to perform memory allocation by using a free-list. **(10 Marks)**
   c. Explain the working of a buddy-system allocator. **(05 Marks)**

PART – B

5 a. Explain the functions of a virtual memory manager. **(10 Marks)**
   b. Describe demand paging, page replacement and page-sharing in detail. **(10 Marks)**

6 a. Explain the file systems and Input-Output Control Systems (IOCS) in detail with a neat diagram. **(10 Marks)**
   b. Explain the organization of sequential access and direct access files. **(04 Marks)**
   c. Explain the file system actions when a file is opened and a file is closed. **(06 Marks)**

7 a. Compute the mean turn-around time and mean weighted turn-around time for following set of processes using FCFS and SRN scheduling.

Processes	P_1	P_2	P_3	P_4	P_5
Arrival Time	0	2	3	5	9
Service Time	3	3	2	5	3

(10 Marks)
   b. Explain the process scheduler with a neat schematic diagram. **(06 Marks)**
   c. Briefly explain real time scheduling. **(04 Marks)**

8 a. Explain the buffering of interprocess messages. **(07 Marks)**
   b. Write a short note on mail box. **(07 Marks)**
   c. Describe exceptional conditions on message passing. **(06 Marks)**

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