04/10/22 (1)

SYCS/SEM III/PRINCIPLES OF OPERATING SYSTEMS

Time: 2½ hrs. **Marks:75**

Note:
1. All questions are compulsory with internal choice.
2. Draw neat diagrams wherever necessary.
3. Figures to the right indicate full marks.

Q.1 Answer the following (Any four) **(20)**

(a) Write a short note on various Multithreading model.
(b) What is Operating System? Explain the roles of OS.
(c) Explain IPC in detail.
(d) Briefly explain Kernel-level threads. Write Pros and Cons of Kernel-level thread.
(e) What is System call? Explain the different types of System calls.
(f) Write a short note on Time sharing Operating System.

Q.2 Answer the following (Any four) **(20)**

(a) What is a deadlock? State necessary and sufficient conditions for the same.
(b) Write a short note on the structure of a typical process.
(c) What is Race Condition? What are the types of race condition?
(d) Explain Semaphore in detail.
(e) Write different process scheduling criterion.
(f) Draw Gantt chart for SJF by considering the following table and find average waiting time:

Process	CPU Burst Time	Arrival Time
P1	7	0
P2	3	2
P3	5	2
P4	8	2
P5	7	3
P6	9	3

Q.3 Answer the following (Any four) **(20)**

(a) State and explain different attributes of a file.
(b) Briefly explain the concept of Swapping.
(c) Write a short note on Disk Scheduling. Explain the important terms related to disk scheduling.
(d) Write a short note on Free-Space Management.
(e) What is Memory Management Unit? Explain the roles of MMU.
(f) Explain File-System Implementation in detail.

Q.4 Answer the following (Any three) **(15)**

(a) Explain the different types of files in OS.
(b) What is Thread? What is the need of thread?
(c) Explain the different strategies for handling Deadlock.
(d) Write a short note on Sleeping barber problem.
(e) Explain demand paging in detail.
(f) Write a short note on disk structure.

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