

Code: 21F00201

MCA II Semester Regular & Supplementary Examinations July 2024

OPERATING SYSTEMS

(Master of Computer Applications)

Time: 3 hours

Max. Marks: 60

Answer all the questions

- 1 (a) Briefly describe and list out the functions of operating system. 6M
(b) Explain about the structure of operating system. 6M
OR
- 2 (a) Explain about the services of operating system. 6M
(b) Explain operating system structure with neat Diagram. 6M
- 3 (a) Describe the differences among short-term and long-term scheduling. 6M
(b) What is the important of Thread and explain its libraries? 6M
OR
- 4 (a) What is scheduling, list out the type of scheduling in OS? 6M
(b) Briefly discuss on Mutual exclusion with busy waiting process with example. 6M
- 5 Imagine a swapping system where memory is comprised of the following hole sizes, listed in memory order: 12 KB, 4 KB, 24 KB, 15 KB, 9 KB, 7 KB, 10 KB, and 11 KB. Now, for each of the following segment requests—14 KB, 8 KB, and 5 KB—let's determine which hole would be chosen using the first fit, best fit, worst fit, and next fit approaches. 12M
OR
- 6 Explain briefly about optimal Page replacement algorithm with example. 12M
- 7 (a) Explain the various techniques used to prevent the Dead lock. 6M
(b) Explain Banker's Dead Lock avoidance algorithm with an example. 6M
OR
- 8 (a) Define management and optimization. 6M
(b) Define and list out Directories. 6M
- 9 (a) Differentiate between Access matrix and Access control. 6M
(b) What is Goals of protection, list out Goals of protection? 6M
OR
- 10 (a) What is Program threats and describe its usages. 6M
(b) Discuss on Cryptography as a security. 6M

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Answer all the questions

- 1 (a) Describe the system components of an operating system and explain them briefly. 6M
- (b) Discuss the functionalities of Operating system. 6M

OR

- 2 (a) Differentiate between multiprogramming, multi-tasking and multi-processing systems. 6M
- (b) Discuss about various operating system structures. 6M

- 3 (a) Consider the following five processes with the length of CPU burst time in milliseconds. 6M

Process	Burst time	Priority
P1	10	3
P2	1	1(highest priority)
P3	2	3
P4	1	4
P5	5	2

Processes are assumed to have arrived at time 0. Find the average waiting time and average turnaround time using non pre-emptive priority scheduling algorithm.

- (b) List out the various scheduling algorithms and explain them. 6M

OR

- 4 (a) What is inter - process communication. What are the different mechanisms by which inter process communication is possible. 6M
- (b) Discuss about the dining philosopher problem in detail. 6M

- 5 (a) List out the various non-contiguous memory allocation schemes and how it differs from contiguous memory allocation techniques. 6M
- (b) Discuss about paging. 6M

OR

- 6 (a) What is the need of page replacement? Consider the following reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1. Find the number of page faults with optimal page replacement algorithm. 6M
- (b) List the advantages and disadvantages of demand paging. 6M

- 7 (a) What is deadlock? Explain the necessary conditions for a deadlock to occur. 6M
- (b) Discuss about resource allocation graph with the help of a neat diagram. 6M

OR

- 8 (a) Discuss about different file allocation methods. 6M
- (b) Discuss about the directory structures. 6M

- 9 (a) Explain the principles and domain of protection. 6M
- (b) Explain the usage of cryptography in providing security. 6M

OR

- 10 (a) Discuss about user authentication. 6M
- (b) Explain about firewalling to protect systems and networks. 6M
