Question Bank

Module-1

Introduction to operating System, System structures

Operating System Services

Q.1) What is operating system? Explain multiprogramming and time sharing systems. [MSP-1 2019-20 - 8M]

Q.2) Distinguish between the following terms:
(i) Multiprogramming and multitasking - Aug/Sep 2020 - 5M
(ii) Multiprocesser systems and clustered systems.
[July/Aug 2022 - 10M]

Q.3) Explain the types of multiprocessing and types of clustering. [MSP-1 - 2019-20 - 5M]

Q.4) Differentiate client server computing and peer-to-peer computing. [Feb/Mar 2022 - 6M]

Q.5) Explain in detail about abstract view of the components of a computer system with a neat diagram. [Jan/Feb 2021 - 10M]

Q.6) Explain about computer system organization with a neat diagram. [Jan/Feb 2021 - 10M]

Q.7) Discuss briefly about operating system operations with diagram. [Jan/Feb 2021 - 10M]

OR

Define operating systems. Explain dual mode of operating systems with a neat diagram. [July/Aug 2022 - 5M]
[MSP-1 2019-20 - 7M, Feb/Mar 2022 - 7M]

OR

With a neat diagram explain:
(i) Operating system (ii) Dual mode operation in OS
[June/July 2023 - 8M]

Q.8) Explain the operating system services with respect to programs and the users. [June/July 2023 - 6M]
↳ (with diagram) [Feb/Mar 2022 - 7M]

OR

List and explain the services provided by OS for the user and efficient operation of system. [July/Aug 2022 - 5M]
Aug/Sep 2020 - 6M

Q.9) Explain about system calls with an example of handling a user application invoking the open() system call. [July/Aug 2022 - 5M]

OR

Discuss briefly about types of system calls with illustration. [Jan/Feb 2021 - 10M]

Q.10) With a neat diagram explain the concept of virtual machines. [MSP-1 2019-20 - 6M]
[Feb/Mar 2022 - 6M]

OR

With a neat diagram, explain the concept of Non virtual machine, Virtual machine and VMware architecture. [June/July 2023 - 10M]

Q.11) Explain layered approach structure of operating system with diagram. [Feb/Mar 2022 - 7M]

Q.12) What are microkernels? Point out their advantages. [Aug/Sep 2020 - 5M]

Module-2

Multi-threaded Programming

Q.1) Explain the multithreading models with diagrams.
[MSP-1 2019-20 - 6M, Feb/Mar 2022 - 7M, June/July 2023 - 4M]

(OR)

Discuss in detail about multithreading models with suitable illustration. [Jan/Feb 2021 - 10M]

Q.2) What is Multithreaded process? Explain four benefits of Multithreaded programming. [June/July 2023 - 6M]
(Aug/Sep 2020 - 4M)

Q.3) Discuss the threading issues with multithreaded models. [MSP-1 2019-20 - 6M, July/Aug 2022 - 10M,

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Process Management

Q.4) Explain the process states with a neat diagrams.
[MSP-1 2019-20 - 6M, Feb/Mar 2022 - 7M]

Q.5) What is a process? Illustrate with a neat diagram the different states of a process and control block.
(June/July 2023 - 6M) [July/Aug 2022 - 5M]

Q.6) Define: (i) Context Switching (ii) Direct & Indirect communication (iii) Automatic & Explicit buffering.
[June/July 2023 - 10M]

Q.7) Describe the implementation of interprocess communication using shared memory and message passing approaches.
[MSP-1 2019-20 - 8M, July/Aug 2022 - 10M]
strength & weakness of two approach - (Aug/Sep 2020 - 5M)

Process Scheduling

Q.8) Explain CPU scheduling criteria. [July/Aug 2022 - 5M]

Q.9) Explain about the different scheduling criteria in process scheduling concept. [Jan/Feb 2021 - 10M]

Q.10) Explain in detail about multiple-processor scheduling with example. [Jan/Feb 2021 - 10M]

Q.11) Explain with diagram : (i) Multithreaded models
(ii) Multilevel queue scheduling.
[June/July 2023 - 8M]

Module-3

Process Synchronization

Q.1) Explain critical section problem. What are the requirements that critical section problem must satisfy.
[Feb/Mar 2022 - 6M] (Any/Sep 2020 - 5M)

OR

What is critical section problem? What are the requirements for the solution to critical section problem? Explain Peterson's solution. [July/Aug 2022 - 8M]
Illustrate ↓
[MQP-1 2019-20 - 6M]

Q.2) Illustrate how Reader's-Writer's problem can be solved by using semaphores. [MQP-1 2019-20 - 8M]
[Feb/Mar 2022 - 7M]

Q.3) Discuss breifly about semaphores in synchronization.
[Jan/Feb 2021 - 10M]

Q.4) Explain Dining Philosopher's solution. (Any/Sep 2020 - 6M)

Deadlocks

Q.5) What is a Deadlock? What are the four necessary conditions for the deadlock to occur?
(Any/Sep 2020 - 4M) [June/July 2023 - 4M,
Feb/Mar 2022 - 7M, MQP-1 2019-20 - 5M, June/July 2022 - 5M]

Q.6) Discuss in detail about deadlock characteristics with example.
[Jan/Feb 2021 - 10M]

Q.7) How to prevent the occurence of deadlock, explain in detail.
[July/Aug 2022 - 5M]

Deadlocks

Q.8) What is resource Allocation Graph? Explain how it is very useful in describing deadly embrace by considering an example. [MQP-1 2019-20 - 5M]

OR

Q.8) Describe the resource allocation graph (i) With deadlock (ii) With a cycle but no deadlock. [Feb/Mar 2022 - 6M]

Q.9) Discuss the various approaches used for deadlock recovery. (Aug/Sep 2020 - 5M) [MQP-1 2019-20 - 6M]

OR

Q.9) What are the two methods to eliminate deadlock? [June/July 2023 - 2M]

Module-4

Memory Management

Q.1) Illustrate with example, the internal and external fragmentation problem. [MQP-1 2019-20 - 6M, Jan/Feb 2021 - 10M, Feb/Mar 2022 - 6M] encountered in contingous memory allocation.

OR

Q.1) With suitable diagram, explain external fragmentation. [June/July 2023 - 4M]

Q.2) Which are commonly used strategies to select a free hole from the available holes? [June/July 2023 - 6M]

Q.3) With the help of a neat diagram, explain the various steps of address binding. [Feb/Mar 2022 - 6M]

Q.4) With a neat diagram, explain paging hardware with TLB. (Aug/Sep 2020 - 8M) [June/July 2023 - 10M, July/Aug 2022 - 5M]

Q.5) Explain the structure of page table. [MQP-1 2019-20 - 8M, July/Aug 2022 - 10M]

Q.6) Explain in detail about paging in a memory management scheme. [Jan/Feb 2021 - 10M]

Q.7) Explain segmentation in detail. [July/Aug 2022 - 5M] (Aug/Sep 2020 - 8M)

Virtual Memory Management

Q.8) What is Demand paging? Explain the steps in handling page fault using appropriate diagram.
(Aug/Sept 2020 - 8M) [June/July 2023 - 10M]

OR

Q) Describe the steps in handling a page fault. [MSP-I 2018-20 July/Aug 2022 - 6M, - 8M]

OR

Q) Discuss briefly about demand-paging in memory management scheme.
[Jan/Feb 2021 - 10M]

Q.9) Illustrate how demand paging affects systems performance.
[MSP-I 2019-20 - 8M, Feb/Mar 2022 - 7M]

Q.10) What is thrashing? How it can be controlled?
[MSP-I 2019-20 - 4M, Feb/Mar 2022 - 6M]

File Systems, Implementation of File System

Module - 5

Q.1) Discuss briefly about the file attributes in a file System.
[Jan/Feb 2021 - 10M]

Q.2) Explain in detail about various file types in a file system.
(Aug/Sept 2020 - 5M) [Jan/Feb 2021 - 10M]

Q.3) Explain in detail about various file operations in a file system.
[Jan/Feb 2021 - 10M, MSP-I 2019-20 - 8M]

Q.4) Explain the various access methods of files.
[MSP-I 2019-20 - 6M, Jan/Feb 2021 - 7M]

Q.5) Explain the various methods in implementing file systems.
[MSP-I 2019-20 - 6M]

Q.6) Explain the different allocation methods.
[July/Aug 2022 - 10M]

File system, Implementing file system.

Q.7) Discuss the various directory structures with required diagrams. [July/Aug 2022 - 10M]

(OR)

Q] With neat diagram, explain Two-level and Three-level directory structure. [June/July 2023 - 8M]

Q.8) Explain contiguous and linked disk space allocation methods with diagram. [June/July 2023 - 12M]
(same answer as for Q.6 from file system)

Q.8) With suitable example, explain any two methods of implementation of free space list. [Feb/Mar 2022 - 6M]

Secondary storage structure, Protection

Q.9) Explain in detail about overview of mass storage structure. [Jan/Feb 2021 - 10M]

Q.10) Explain the various disk scheduling algorithms with example. (Aug/Sep 2020 - 10M) [MQP-1 2019-20 - 8M]
[Jan/Feb/Mar 2022 - 7M]

Q.11) Explain access matrix method of system protection with domain as objects and its implementation.
(Aug/Sep 2020 - 6M) [July/Aug 2022 - 10M]

(OR)

Q) How the Access matrix model of protection can be viewed in OS? [June/July 2023 - 8M]

Additional Questions

Module - 1

Q.1) Define operating systems. What are multiprocessor systems? Explain their three main advantages. [Aug/Sept 2020 - 5M]

Q.2) What are system calls? Briefly point out its types. [Dec 2019/Jan 2020 - 5M]

Module - 2

Q.1) Compare and contrast- short term, medium term and long-term scheduling. [Aug/Sept 2020 - 6M]

Q.2) Explain process states with state transition diagram. Also explain PCB with a neat diagram. [Dec 2019/Jan 2020 - 6M]

Module - 3

Q.1) Define semaphores. Explain its usage and implementation. [Dec 2019/Jan 2020 - 6M]

(OR)

What are semaphores, explain how mutual exclusion is implemented with semaphores. [Aug/Sept 2020 - 5M]

Module - 4

Q.1) Explain file system mounting. [Aug/Sept 2020 - 5M]

Q.2) Write short notes on:
(i) External & internal fragmentation.
(ii) Dynamic loading and linking. [Dec 2018/Jan 2019 - 4M]

Q.3) What do you mean by free space list? With suitable example; explain any 3 methods of free space list implementation. [Dec 2018/Jan 2019 - 8M]

Q.4) Explain copy-on-write process in virtual memory. [June/July 2018 - 4M]