

# COA CS-404 Unit-4 PYQ Analysis (2022–2025)

## Memory Organization

### Syllabus

- Main Memory (RAM, ROM)
  - Secondary Memory
  - Magnetic Tape
  - Magnetic Disk
  - Optical Storage
  - Cache Memory
  - Cache Structure & Design
  - Mapping Schemes
  - Replacement Algorithms
  - Improving Cache Performance
  - Virtual Memory
  - Memory Management Hardware
- 

## Topic: Main Memory (RAM & ROM)

### Asked Questions

✓ June 2022

- Differentiate RAM and ROM.

✓ November 2022

- Explain various types of ROM.

✓ June 2024

- Explain RAM and ROM with applications.

## Probability



## 2026 Prediction

- Differentiate RAM and ROM.
  - Explain types of RAM and ROM.
  - Explain characteristics of primary memory.
- 

# Topic: Secondary Memory

## Asked Questions

✓ June 2023

- Explain secondary storage devices.

✓ December 2024

- Compare primary and secondary memory.

## Probability



## 2026 Prediction

- Explain secondary storage devices.
  - Compare primary and secondary memory.
-

# Topic: Magnetic Tape

## Asked Questions

✓ November 2022

- Explain Magnetic Tape organization.

## Probability



## 2026 Prediction

- Explain Magnetic Tape storage.
  - Advantages and disadvantages of Magnetic Tape.
- 

# Topic: Magnetic Disk

## Asked Questions

✓ June 2023

- Explain Magnetic Disk organization.

✓ June 2025

- Explain structure of magnetic disk.

## Probability



## 2026 Prediction

- Explain Magnetic Disk organization with diagram.

- Compare Magnetic Tape and Magnetic Disk.
- 

## Topic: Optical Storage

### Asked Questions

✓ June 2024

- Explain Optical Storage Devices.

### Probability



### 2026 Prediction

- Explain CD, DVD and Blu-ray storage.
  - Advantages of Optical Storage.
- 

## Topic: Cache Memory

### Asked Questions

✓ June 2022

- Explain Cache Memory and its importance.

✓ November 2022

- Explain Cache Memory Organization.

✓ June 2023

- Explain Cache Memory.

✓ November 2023

- Discuss Cache Memory Design.

✓ June 2024

- Explain Cache Structure.

✓ December 2024

- Explain Cache Memory.

✓ June 2025

- Explain Cache Memory Organization.

## Probability



# MOST REPEATED TOPIC OF UNIT-4

## 2026 Prediction

- Explain Cache Memory with diagram.
- Explain Cache Structure and Design.
- Why is Cache Memory required?
- Explain Cache Hit and Cache Miss.

---

## Topic: Cache Mapping Schemes

### Asked Questions

✓ June 2022

- Explain Direct Mapping.

✓ June 2023

- Explain Associative Mapping.

✓ November 2023

- Explain Set Associative Mapping.

✓ June 2024

- Compare cache mapping techniques.

✓ June 2025

- Explain cache mapping schemes.

## Probability



## 2026 Prediction

- Explain Direct Mapping with example.
  - Explain Associative Mapping.
  - Explain Set Associative Mapping.
  - Compare all three mapping techniques.
- 

# Topic: Replacement Algorithms

## Asked Questions

✓ November 2022

- Explain LRU Replacement Algorithm.

✓ June 2024

- Explain Cache Replacement Policies.

✓ December 2024

- Write short note on LRU.

## Probability



### 2026 Prediction

- Explain LRU Replacement Algorithm.
  - Explain FIFO Replacement Algorithm.
  - Compare LRU and FIFO.
- 

# Topic: Improving Cache Performance

## Asked Questions

 June 2025

- Explain techniques for improving cache performance.

## Probability



### 2026 Prediction

- Explain methods to improve cache performance.
  - Explain cache hit ratio and miss penalty.
- 

# Topic: Virtual Memory

## Asked Questions

 June 2022

- Explain Virtual Memory.

✓ June 2023

- Explain Virtual Memory Management.

✓ June 2024

- Explain Virtual Memory and Paging.

✓ December 2024

- Explain concept of Virtual Memory.

✓ June 2025

- Explain Virtual Memory with diagram.

## Probability



## 2026 Prediction

- Explain Virtual Memory with diagram.
- Advantages of Virtual Memory.
- Explain Paging in Virtual Memory.

---

# Topic: Memory Management Hardware

## Asked Questions

✓ June 2024

- Explain Memory Management Hardware.

✓ June 2025

- Explain hardware support for memory management.

## Probability



### 2026 Prediction

- Explain Memory Management Hardware.
- Explain address translation mechanism.
- Explain role of MMU (Memory Management Unit).

## Year-Wise PYQ Summary

Year	Questions Asked
June 2022	RAM/ROM, Cache Memory, Direct Mapping, Virtual Memory
Nov 2022	ROM Types, Magnetic Tape, Cache Organization, LRU
June 2023	Secondary Memory, Magnetic Disk, Cache Memory, Associative Mapping, Virtual Memory
Nov 2023	Cache Design, Set Associative Mapping
June 2024	RAM/ROM, Optical Storage, Cache Structure, Mapping Comparison, Virtual Memory, MMU
Dec 2024	Primary vs Secondary Memory, Cache Memory, LRU, Virtual Memory
June 2025	Magnetic Disk, Cache Organization, Mapping Schemes, Cache Performance, Virtual

