Exam topics of COS
Autumn 2025

1 **Processes, Threads, CPU Scheduling**

Definition of processes and threads, Inter-process communication, Thread models, process and thread scheduling, CPU scheduling algorithms

2 **Synchronization, Deadlocks, Memory Management and Virtual Memory**

Semaphore, Critical section, Synchronization problems, Monitors.
Deadlock: Prevention, Avoidance, Detection
Address binding/mapping, Contiguous memory allocation, Paging, Demand paging, Page replacement, Trashing

3 **CPU architecture – Mic-1**

Mic-1, Data path, Data path timing, Control unit, Microinstructions, Registers, IJVM architecture, Instruction set design

4 **Memory interface, Cache and Pipeline**

Mic-2, Mic-3, Instruction Fetch Unit,
Instruction overlap, Pipeline hazards: Structural hazards, Data hazards and Control hazards, Associative mapped -, Direct mapped -, N-way Set associative mapped Cache, Memory Interface 8-bit vs. 16-bit

The keywords in the field below each topic are intended as inspiration for things that you can talk about during your presentation.

You make a presentation of a randomly given topic around the keywords (8 minutes)

Subsequent questions are based on the given topic, but may touch some other topics of COS. (8 minutes)