OPERATING SYSTEM Paper 1

SECTION A

1. What is the Von Neumann architecture?
2. Name the main components of a CPU.
3. What is the purpose of the Arithmetic Logic Unit (ALU)?
4. Define a register in a CPU.
5. What is the role of the Control Unit (CU)?
6. What does the system clock do in a CPU?
7. What is an address bus?
8. Define a data bus.
9. What is the function of the memory data register (MDR)?
10. What is the difference between unidirectional and bidirectional buses?
11. Define the fetch-execute cycle.
12. What does a program counter (PC) do?
13. What is the role of cache memory in a computer system?
14. Name two common types of computer ports.
15. What is the purpose of the memory address register (MAR)?
16. What does the Universal Serial Bus (USB) do?
17. What is an interrupt?
18. Define an accumulator in CPU architecture.
19. What is the function of the HDMI port?
20. What is the difference between a VGA and an HDMI port?
21. What is a word in computer memory?
22. What is overclocking?
23. Define a logical shift.
24. What is a cyclic shift?
25. What is meant by clock speed?
26. What is a flag in a status register?
27. What is the role of the Immediate Access Store (IAS)?
28. What is a dual-core CPU?

29. What is the function of the control bus?
30. What is the purpose of a current instruction register (CIR)?
31. What is meant by bus width?
32. What is a binary shift?
33. Define a left shift operation.
34. What does the status register store?
35. What is the difference between cache memory and RAM?
36. What is a carry flag (C)?
37. What is an interrupt service routine (ISR)?
38. What is the purpose of the memory buffer register (MBR)?
39. What is a right shift?
40. What is meant by the term 'register transfer notation' (RTN)?
41. What is a parity flag (P)?
42. What is a Video Graphics Array (VGA)?
43. What is the maximum refresh rate supported by VGA?
44. Define bit manipulation.
45. What is the purpose of a control signal in the fetch-execute cycle?
46. What does XOR do in bit manipulation?
47. What is meant by synchronous and asynchronous data transmission?
48. Define the term "mask" in bit manipulation.
49. What is a quad-core CPU?
50. What does the term "system bus" refer to?

SECTION B

1. What is the role of an operating system (OS)?
2. Define multitasking in an operating system.
3. Name three types of scheduling routines.
4. What is the difference between CLI and GUI?
5. Define memory management.
6. What is virtual memory?
7. What is a process in computing?
8. Define paging.
9. What does the acronym DMA stand for?
10. Name two pre-emptive scheduling algorithms.
11. Explain the role of a kernel in an OS.
12. What is the purpose of device drivers?
13. What is a dirty page in memory?
14. What is meant by process scheduling?
15. Describe what a page fault is.
16. Define logical memory.
17. What is meant by the term "context switching"?
18. What is disk thrashing?
19. What is the role of a DMA controller?
20. Define the term “process control block (PCB)”.
21. What is "round robin" scheduling?
22. Define segment memory.
23. What does “P flag = 0” indicate during page replacement?
24. Name the three possible process states.
25. What is meant by first-come, first-served (FCFS) scheduling?
26. Explain the role of the Bootstrap program.
27. Define internal fragmentation.
28. What does the Interrupt Dispatch Table (IDT) do?
29. What is "frame" in the context of memory?
30. Name a non-pre-emptive scheduling routine.

31. What is the thrash point in virtual memory?
32. Define the term “swap space”.
33. What does the term "burst time" refer to?
34. What is the use of a page table?
35. What is the primary role of an interrupt handler?
36. Define Belay’s anomaly.
37. What is a process ID?
38. What is meant by segmentation in memory management?
39. How does a modern OS hide the complexity of hardware from the user?
40. What is a page replacement algorithm?
41. What are fixed-size logical memory blocks called?
42. What is the function of the system kernel during interrupt handling?
43. What is an "optimal page replacement" algorithm?
44. What is meant by process starvation?
45. Define the term “external fragmentation”.
46. What is the purpose of an interrupt priority level (IPL)?
47. What is direct memory access?
48. Define physical memory.
49. What is meant by a fixed time quantum in round-robin scheduling?
50. What is the role of a process scheduler?