

A-Level Computer Science

Name: _____ Score: _____

1. Multi-tasking lets several programs appear to run at once by:
 - ☐ switching the CPU quickly between processes
 - ☐ using several monitors
 - ☐ deleting idle programs
 - ☐ compressing the programs
2. A benefit of virtual memory is that it:
 - ☐ lets the total memory used exceed the physical RAM, and isolates processes
 - ☐ makes the CPU run faster
 - ☐ removes the need for a disk
 - ☐ encrypts all data
3. An interpreter:
 - ☐ translates and runs the program one statement at a time, with no executable produced
 - ☐ always produces a stand-alone executable
 - ☐ reports all errors before running
 - ☐ is faster at run time than compiled code
4. In BNF, a terminal symbol is:
 - ☐ literal text that appears in the program
 - ☐ the name of another rule
 - ☐ always recursive
 - ☐ a syntax error
5. Spooling helps the system because:
 - ☐ print jobs queue on disk, so the CPU never waits for the slow printer
 - ☐ it encrypts print jobs
 - ☐ it speeds up the CPU clock
 - ☐ it deletes old documents
6. Round-robin scheduling gives each ready process a fixed time slice, then moves it to the back of the queue — making it fair and responsive.
 - ☐ True ☐ False

7. Evaluate the RPN expression '3 4 2 * +'.

8. Segmentation divides memory into variable-sized logical units (code, stack, heap), each with its own permissions, whereas paging uses fixed-size pages.

☐ True ☐ False

9. Reverse Polish Notation needs no brackets or precedence rules, and can be evaluated directly with a stack.

☐ True ☐ False

10. In paging, memory is divided into:

- ☐ fixed-size pages (logical) mapped to same-sized frames (physical)
- ☐ variable-sized logical segments
- ☐ single bytes
- ☐ one big block per process

1. switching the CPU quickly between processes

The OS rapidly switches the single CPU between processes so they all seem to progress together.

2. lets the total memory used exceed the physical RAM, and isolates processes

Virtual memory gives each process a private space and lets the working set exceed installed RAM by using disk.

3. translates and runs the program one statement at a time, with no executable produced

It works line by line, reporting errors as it reaches them; nothing is saved as an executable, and it is generally slower.

4. literal text that appears in the program

Terminals are literal tokens; non-terminals are names of other production rules.

5. print jobs queue on disk, so the CPU never waits for the slow printer

Spooling buffers print jobs to disk so the fast CPU is not held up by the slow printer.

6. True

Equal time slices in turn stop any one process hogging the CPU, so interactive programs stay responsive.

7. 11

Push 3, 4, 2; '*' pops 4 and 2 $\rightarrow$ 8; '+' pops 3 and 8 $\rightarrow$ 11.

8. True

Segments match the program's logical structure; pages are uniform fixed-size blocks — some systems combine both.

9. True

Push operands; each operator pops its operands and pushes the result — which is exactly how a stack machine runs.

10. fixed-size pages (logical) mapped to same-sized frames (physical)

Paging uses fixed-size pages and frames, linked by a page table. (Variable sizes are segmentation.)