Year 11 - De Lisle Mock Examinations 2026

Subject	Computer Science	
Title/Topic	**Format**	**Length**
Paper 1	Written	1.5 Hrs
Paper 2	Written	1.5 Hrs

In this Advent assessment I will be asked to show I can…

PAPER 1: COMPUTER SYSTEMS

1. Data Representation

- Analogue vs digital data
- Sound sampling:
  - Sampling
  - Sample rate (Hz)
  - Bit depth
  - Relationship between bit depth and accuracy
- Bitmap images:
  - Pixel definition
  - Image resolution
  - Colour depth
  - File size calculations
- Calculating minimum bits needed to represent a given number of values
- Units of data storage (bits, bytes, KB, MB, GB, TB)
- Converting between storage units

2. Secondary Storage

- Types of secondary storage:
  - Optical storage
  - Solid-state storage
- Characteristics:
  - Capacity
  - Portability
  - Speed
  - Durability
- Justifying storage choices for given uses

3. Operating Systems & Utility Software

- Operating system functions:
  - Memory management
  - File management
  - Peripheral management
  - User management
  - Multitasking
- Utility software:
  - Purpose of utility software
  - Encryption:
    - Purpose

        - How it protects data
        - Impact on security

4. Ethical, Environmental & Legal Issues

- Ethical implications of technology decisions
- Environmental impacts:
    - E-waste
    - Device lifespan
    - Sustainability
- Balancing benefits and drawbacks for users and organisations

5. Networks

- LAN vs WAN characteristics
- Network topologies:
    - Mesh
    - Star
- Advantages and disadvantages of different topologies
- Wired vs wireless networking:
    - Performance implications
    - Practical benefits
- Factors affecting network performance:
    - Bandwidth
    - Number of concurrent users
- Cloud storage:
    - Drawbacks and risks
- Hardware needed to connect a LAN to the internet
- IPv4 addressing:
    - Valid vs invalid addresses
- DNS process:
    - Converting URLs to IP addresses
- Data protection legislation:
    - Identifying relevant legislation
    - Organisational responsibilities

6. Number Systems

- Binary, denary and hexadecimal
- Converting between:
    - Denary ↔ binary
    - Binary ↔ hexadecimal
- Binary arithmetic:
    - Binary addition
    - Binary shifts:
        - Left shifts
        - Right shifts
        - Effect on numerical value

7. Character Sets & CPU Architecture

- ASCII:
  - Character to binary encoding
- Unicode:
  - Benefits
  - Drawbacks
- CPU registers:
  - Identifying different registers
  - Purpose of each register

PAPER 2: COMPUTATIONAL THINKING, ALGORITHMS & PROGRAMMING

1. Computational Thinking

- Decomposition
- Abstraction
- Algorithmic thinking
- Matching techniques to examples

2. Algorithms & Logic

- Writing algorithms using:
  - Selection
  - Iteration
  - Input and output
- Boolean logic:
  - AND
  - OR
  - NOT
- Boolean operators in conditions
- Logic circuits:
  - Drawing circuits
  - Completing truth tables

3. Testing

- Types of test data:
  - Normal
  - Boundary
  - Invalid / erroneous
- Selecting appropriate test data

4. Programming Constructs

- Selection (IF statements)
- Iteration:
  - Count-controlled loops
  - Condition-controlled loops
- Identifying constructs used in algorithms

5. Flowcharts & Tracing

- Interpreting flowcharts
- Tracing variable values
- Determining output from repeated execution

6. IDEs & Program Development

- Integrated Development Environments:
  - Tools provided by an IDE
  - Purpose of each tool (e.g. debugging, editing, error checking)

7. Sorting & Searching Algorithms

- Sorting algorithms:
  - Bubble sort
  - Insertion sort
  - Merge sort
- Understanding how each algorithm works
- Linear search:
  - How it operates
  - Stopping conditions
- Arrays:
  - Characteristics
  - Fixed size
  - Indexed access

8. File Handling

- Reading from external text files
- Looping through file contents
- Outputting filtered data
- Casting between data types

9. Programming with Data

- Variables and identifiers
- Data types
- Arrays:
  - Indexing
  - Iteration through arrays
- Tracing array-based algorithms
- Refining algorithms when data structures change

10. Writing Algorithms & Code

- Writing algorithms using OCR Exam Reference Language or a high-level language
- String handling:
  - Length checking
  - Equality comparison
- Functions:

- Parameters
- Return values

- Using functions within algorithms
- Repetition until a condition is met

11. Databases & SQL

- Database concepts:
  - Tables
  - Records
  - Fields
- Writing SQL queries:
  - SELECT
  - FROM
  - WHERE
- Choosing appropriate data types for fields

What should I do to revise and prepare for this examination?

To prepare for this assessment:

Complete the revision activties/booklets given out in class and set for homework.

Complete the weekly revision quizzes for homework.

What useful websites/resources could I use to help me prepare?

GCSE Pod
YouTube - CraignDave