GCE Computing

AS

At AS, candidates following this specification do not need to have prior knowledge of Computing or ICT. In the specification there are two units which allow candidates to demonstrate their knowledge of the fundamental principles of Computing.

Unit 1: Problem Solving, Programming, Data Representation and Practical Exercise

On-screen exam, 2 hours

60% of total AS marks
30% of total A Level marks

- Short answer questions
- All questions compulsory
- Pre-release material (skeleton program and test data in a range of programming languages) published in advance

Available June

Subject Content

- Stages of problem solving
- Drawing and interpreting simple state transition diagrams and transition tables
- Introducing the term algorithm, expressing the solution to a simple problem as an algorithm
- Programming in a high level programming language and the fundamentals of structured programming
- The binary number system, number bases and information coding schemes
- The stages of development of a hardware/ software system

Unit 2: The Computer Components, The Stored Program Concept and The Internet

Written Paper, 1 hour

40% of total AS marks
20% of total A Level marks

- Question paper/answer booklet examination
- Externally marked by AQA
- Short answer questions
- All questions are compulsory

Available January and June

Subject Content

- Logic gates and boolean algebra
- The internal components of a computer
- Hardware devices
- The fundamentals of computer systems
- The structure of the Internet and networking protocols
- Consequences of uses of computing

A2

The A2 specification builds on the content of AS with focus on programming and problem solving including communication and networking. For the coursework unit, candidates are required to complete a report on a computer-based solution to a real problem that they have identified.

Unit 3: Problem Solving, Programming, Operating Systems, Databases and Networking

Written Paper, 2 hours 30 minutes

30% of total A Level marks

- Question paper/answer booklet examination
- Externally marked by AQA
- Short answer and extended answer questions
- All questions are compulsory

Available June

Subject Content

- Problem solving and algorithmic complexity
- Algorithms and data structures for problem solving
- Programming paradigms and object orientated programming techniques
- The role of an operating system
- Database design
- Communication and networking
- Security and integrity of data in a data processing environment and errors

Unit 4: The Computing Practical Project

Internally assessed unit

20% of total A Level marks

Candidates will be required to document the stages of a programmed solution to a real problem associated with a user whose realistic needs should be taken into account when specifying, designing and implementing the solution

Available June

Subject Content

- Evaluate the possible need for development of a computer-based solution to a real problem
- Document a design that meets the requirements of a real problem in terms of hardware and software
- Document the analysis, design, construction, testing, training and maintenance of a programmed solution

Assessment Objectives

AO1

Describe and explain the purpose and characteristics of a range of computing applications and show an understanding of the characteristics of computer systems; describe and explain the need for and use of various forms of data organisation and processing to support the requirements of a computer-based solution; describe and explain the systematic development of high-quality solutions to problems and the techniques for implementing such solutions; comment critically on the consequences of current uses of computing

AO2

Analyse a problem and identify the parts which are appropriate for a computer based solution; select, justify and apply appropriate techniques and principles to develop data structures and algorithms for the solution of problems; design, implement and document an effective solution using appropriate hardware and software, including the use of a programming language

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