Advance information June 2022

GCSE Computer Science (8525)

Version 1.0

Because of the ongoing impacts of the Coronavirus (COVID-19) pandemic, we are providing advance information on the focus of June 2022 exams to help students revise.

This is the advance information for GCSE Computer Science (8525).

Information

- This advance information covers component **8525/2** only.
- It is **not** permitted to take this advance information into the exam.
- The format of the papers remains unchanged.
- The information is presented in specification order and not in question order.
- Exam questions will sample content from the areas specified in this advance information.

Advice

- Students and teachers should consider how to focus their revision of other non-listed parts of the specification, for example to review whether other topics may provide knowledge which helps understanding in relation to the areas being tested in 2022.
- Students will be credited for using any relevant knowledge from any non-listed topic areas when answering questions.
- Students will still be expected to apply their knowledge to unfamiliar contexts.

Focus of the June 2022 exam

Paper 1: Computational thinking and programming skills – all programming languages (8525/1)

There is no advance information for this paper.

Paper 2: Computing concepts (8525/2)

Questions in this examination will focus on the topics listed below. Where appropriate we have listed both the topic and content that will be assessed. If there is no content listed then questions may come from any of the content in that overall topic area of the specification.

Specification reference	Name of topic	Content
3.3.1	Number bases	
3.3.2	Converting between number bases	
3.3.3	Units of information	
3.3.4	Binary arithmetic	
3.3.5	Character encoding	
3.3.6	Representing images	Understand what a pixel is and be able to describe how pixels relate to an image and the way images are displayed. **AND** Describe the following for bitmaps: • image size • colour depth. Know that the size of a bitmap image is measured in pixels (width × height). **AND** Describe how a bitmap represents an image using pixels and colour depth. **AND** Calculate bitmap image file sizes based on the number of pixels and colour depth.
3.3.7	Representing sound	

3.3.8	Data compression	Explain what data compression is. Understand why data may be compressed and that there are different ways to compress data. **AND** Explain how data can be compressed using Huffman coding. Be able to interpret Huffman trees. **AND** Explain how data can be compressed using run length encoding (RLE). **AND** Represent data in RLE frequency/data pairs.
3.4.2	Boolean logic	
3.4.3	Software classification	
3.4.4	Classification of programming languages and translators	

3.4.5	Systems architecture	Understand the different types of memory within a computer: • RAM • ROM • Cache • Register. Know what the different types of memory are used for and why they are required. **AND** Be aware of different types of secondary storage (solid state, optical and magnetic). Explain the operation of solid state, optical and magnetic storage. Discuss the advantages and disadvantages of solid state, optical and magnetic storage. **AND** Explain the term cloud storage. **AND** Explain the advantages and disadvantages of cloud storage when compared to local storage.

3.5	Fundamentals of computer networks	Describe the main types of computer network including: • Personal Area Network (PAN) • Local Area Network (LAN) • Wide Area Network (WAN). **AND** Understand that networks can be wired or wireless. Discuss the advantages and disadvantages of wireless networks as opposed to wired networks. **AND** Explain the purpose and use of common network protocols including: • Ethernet • Wi-Fi • TCP (Transmission Control Protocol) • UDP (User Datagram Protocol) • IP (Internet Protocol) • HTTP (Hypertext Transfer Protocol) • HTTPS (Hypertext Transfer Protocol Secure) • FTP (File Transfer Protocol) • email protocols: • SMTP (Simple Mail Transfer Protocol) • IMAP (Internet Message Access Protocol). **AND** Understand that the HTTP, HTTPS, SMTP, IMAP and FTP protocols operate at the application layer. Understand that the TCP and UDP protocols operate at the transport layer.
3.6.2	Cyber security threats	
3.6.3	Methods to detect and prevent cyber security threats	
3.7	Relational databases and structured query language (SQL)	

3.8	Ethical, legal and environmental impacts of digital technology on wider society, including issues of privacy	

END OF ADVANCE INFORMATION