

Name:

Class Teacher:

Date:



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# OCR J276

# GCSE Computer Science

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## *REVISION BOOKLET*

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### 1.6 SYSTEM SECURITY

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#### **Content in J276 GCSE Computer Science:**

- 1.1 Systems Architecture
- 1.2 Memory
- 1.3 Storage
- 1.4 Wireless and Wired Networks
- 1.5 Network Topologies, Protocols and Layers
- 1.6 System Security
- 1.7 Systems Software
- 1.8 Ethical, Legal, Cultural and Environmental Concerns
- 2.1 Algorithms
- 2.2 Programming Techniques
- 2.3 Producing Robust Programs
- 2.4 Computational Logic
- 2.5 Translators and Facilities of Languages
- 2.6 Data Representation

## 1.6 SYSTEM SECURITY

TOPIC			
Forms of attack			
Threats posed to networks:			
Malware			
Phishing			
People as the 'weak point' in secure systems (social engineering)			
Brute force attacks			
Denial of service attacks			
Data interception and theft			
The concept of SQL Injection			
Poor network policy			
Identifying and preventing vulnerabilities:			
Penetration testing			
Network forensics			
Network policies			
Anti-malware software			
Firewalls			
User access levels			
Passwords			
Encryption			

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## 1.6 SYSTEM SECURITY

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### FORMS OF ATTACK

### THREATS POSED TO NETWORKS

*MALWARE*

*PHISHING*

*PEOPLE AS THE 'WEAK POINT' IN SECURE SYSTEMS (SOCIAL ENGINEERING)*

*BRUTE FORCE ATTACKS*

*DENIAL OF SERVICE ATTACKS*

*DATA INTERCEPTION AND THEFT*

*THE CONCEPT OF SQL INJECTION*

*POOR NETWORK POLICY*

**IDENTIFYING AND PREVENTING VULNERABILITIES**

*PENETRATION TESTING*

*NETWORK FORENSICS*

*NETWORK POLICIES*

*ANTI-MALWARE SOFTWARE*

*FIREWALLS*

*USER ACCESS LEVELS*

*PASSWORDS*

*ENCRYPTION*

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## EXAM QUESTIONS

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### QUESTION 1

A doctor's surgery stores hundreds of patients' details on its computer network. The surgery is concerned about the security of its patients' sensitive medical data. Staff are already required to use strong passwords to protect systems. Explain, with reference to system security, **three** other ways that the surgery could protect the system.

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Identify **three** errors that the surgery's staff could make, that may endanger the security of the network and outline a procedure that could be put in place to prevent each error.

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[6]

**QUESTION 2**

A school has all of its computers in a local area network (LAN). Explain **two** measures which the school will need to take to ensure the security of the network.

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[4]

**QUESTION 3**

Security on a computer can be provided directly by the operating system or by using utility programs. Utility programs include antivirus, file transfer, firewall and system clean up. State which **two** of these utilities can be used for security.

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[2]

Identify and describe **two** methods by which the operating system can provide additional security directly.

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[4]