OCR Computer Science J277

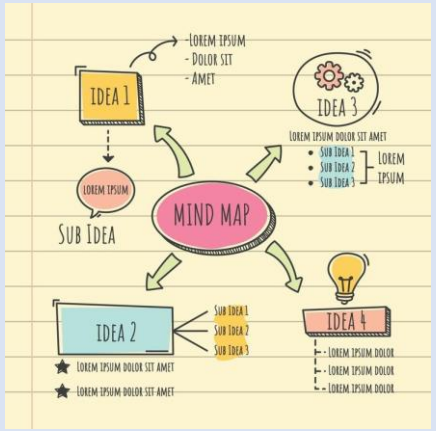
Component 1

Revision methods

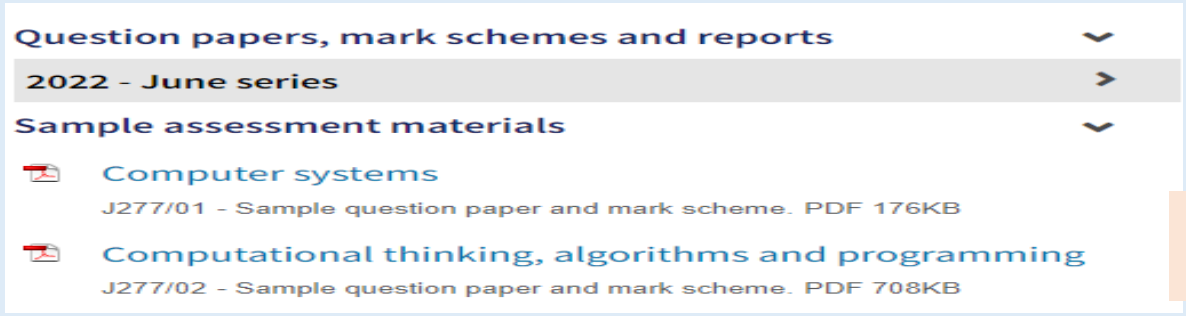
When you are asked to revise for an assessment, you need to condense notes in you book/online into:

- Mindmaps or revision clocks.
- Practice past paper questions.

We suggest you use **OCR** and **Teach-ICT** (Copy the links)



OCR **tinyurl.com/5h7trwpv**



Teach-ICT

www.teach-ict.com

tinyurl.com/5n88xcjy

Username:
wr5 2xd
Password:
python6

1.1 System Architecture

Purpose of the CPU

Common CPU components (ALU, CU, cache, registers)

How common characteristics of CPUs affect their performance
-Clock speed, cache size, number of cores

Embedded systems:
-Purpose and characteristics, using examples.

Low stakes quizzes:

CPU Link
Registers Link
Cache & Performance Factors Link
Memory Link
Units of Measurement Link
Storage Link
Binary Link
Hex

Characters Link
Images Link
Sound Link
Compression Link

1.2 Memory & Storage

Primary storage (RAM, ROM and virtual memory)
- Need, purpose and differences

Secondary storage:
-Need, common types i.e. optical, magnetic, solid state and cloud

Advantages and disadvantages i.e. capacity, speed, portability, durability, reliability and cost

Units of data storage (bit, nibble etc)
-Calculating data capacity requirements

Data Representation:
-Decimal to binary to hexadecimal, binary addition, binary shifts
-Character sets
-Images (how an image is represented, metadata, impact of colour depth & picture resolution)
-Sound (how sound is sampled and stored. Effect of sample rate, bit depth and duration on quality & file size

Compression:
-Need for compression, lossy and lossless

1.3 Networks, connections & protocols

Types of networks:
-LAN and WAN (definition, similarities & differences)
-Factors that affect the performance (wired & wireless)
-Client-server and peer-to-peer network
-Network hardware
-Domain name system, local & external hosting, web servers & clients, the cloud
- Star & mesh network topologies

Modes of connection:
-Ethernet, wifi & Bluetooth
-Encryption
-IP and MAC addresses (where used, describe them and similarities & differences)
-Standards (defacto and dejure)
-Protocols: tcp/ip, http, https, ftp, pop, impa, smtp

The concept of layers:
-Purpose
-Advantages

1.4 Network Security

Threats to computer systems and networks
- Malware, social engineering, brute-force attacks, denial of service attacks, data interception & theft, SQL injection

Identifying and preventing vulnerabilities:
-Penetration testing, anti-malware software, firewalls, user access levels, passwords, encryption, physical security

Low stakes quizzes:

LAN and WAN Link
Network Performance Link
Client-Server and P2P Link
Network Hardware Link
Internet and DNS Link
Network Topologies
Modes of Connection Link
Protocols and Layers Link

Network Threats Link
Prevention Methods Link

1.5 System Software

1.5.1 Operating systems
-The purpose and functionality of operating systems:
- **User Interface**
- **Memory management and multitasking**
- **Peripheral management and drivers**
- **User management**
- **File management**

1.5.2 Utility software
-The purpose and functionality of utility software
-Utility system software:
- Encryption software
- Defragmentation
- Data compression

Low stakes quizzes:
[Operating System Link]
[Utility Software Link]