**FORM *ONE* COMPUTER STUDIES**

**Term two 2015**

**MARKING SCHEME**

**Q1**a) **definitions of a computer**

– an electronic device that accepts, stores and processes data into information

* An assembly of different components that work under instructions to process data into information

**b) two differences between data and information**

- data are raw facts that cannot be used for decision making, while information is processed data that can be used for decision making.

- data is meaningless to the user, while information has meaning

c) **computer system** – a combination of different components that each performs its own function, but they all work together to process data into information.

**d) components of a computer system and examples**

- hardwareeg. Keyboard, mouse, printer, scanner

- softwareeg. Operating system, application software, firmware

- livewareeg. User, technician, engineer,

**Q 2.a) State any four different parts that make up a computer. (2mks)**

 🗸System unit

 🗸Monitor

 🗸Keyboard

 🗸Mouse

 🗸Printer

 🗸Speaker •½mk for any correct answer

b) -PC’s are becoming smaller and portable e.g. personal digital assistant (PDA) (1 mk)

 c) **factors to consider when preparing a computer laboratory**

- – security of computer (4 mks)

 -Reliable source of power

 -Number of computers to be installed/ space

 -Max number of users Any2 stated and explained 2x2=4mks

 **d) functions performed by each (2 marks each)**

1. **Control unit**

-interpreting instructions

- issuing control instructions to the operating system and other devices

1. **Main memory**
* Stores data temporarily just before and after processing
* Stored instructions waiting to be executed
* Holds data and programs currently being processed
* Stores intermediate results of processing awaiting transfer to the output devices
1. **System clock**

**-**it determines theprocessing speed of the computer

1. **Arithmetic and logic unit**
* Performs arithmetic calculations like addition, multiplication, subtraction and division

**Q3**. a) - keyboard

-Mouse, trackball, light pen,

-scanner

b)

1. **Impact printers and Non- impact printers (2mks)**

|  |  |
| --- | --- |
| Impact printers | Non impact printers |
| -print using striking mechanism.-slower and noise. -produce multiple copies-cheaper technology | -use ink, thermal or laser mechanism-faster and quiet-costly technology |
|  **½mark for each**  |

1. **–MICR and OMR (2 marks) (2mks)**

MICR - Recognizes characters formed from magnetic ink.

OMR - Is system of reading marks or lines which have been marked in exactly right position on a card or document?

1. **CD and DVD (2 marks)**
* A DVD has a larger storage capacity than a CD
* A DVD has better data storage quality than a CD
1. **Microcomputer and microprocessor (2 marks)**
* A microcomputer uses a silicon chip called a microprocessor to process data into information
* A microprocessor is a small computer processor, manufactured on a single silicon chip

**Q4 a) functions of the CPU**

–carries out the processing of data

-System control i.e. controls the sequenceof operation within the computer

-Supplies the commands to all parts of the computer

 -Controls the main memory in storing of data and instructions

 -Provides temporary storage (RAM)

 -Provides permanent storage (ROM) **Any 3 functions 1x3=3mks**

**b) Techniques of using a mouse**

* Clicking
* Double clicking
* Right clicking
* Drag and drop **award each ½ mk**

 c) i) **BIOS** – Basic input output system✓1mk

 ii) **Purpose** – BIOS controls the booting process of a computer✓1mk

**d) Functions of a UPS @ 1mk total = 2mks**

- Regulate (cleans) power from unstable supply

 - Provides temporary power supply to the computer system incase of sudden power blackouts.

**Q5**. A)

1. Buffer: - Fast process memories that holds data awaiting process✓2mks
2. Cache: - special type of RAM memory that improves the performance of a CPU ✓2mks
3. Registers :- special type of memory that holds data and instructions temporarily just before and after processing.

**b) two differences between Random Access Memory and Read Only Memory (4 marks)**

- RAM is volatile while ROM is non volatile

- ROM is cheaper than RAM

-RAM holds data and instructions temporarily while ROM stores permanent and semi permanent data and instructions

- RAM is rewritable while ROM is read only

1. **functional organization of the CPU**

Secondary storage

Input devices

Output devices

Control Unit

A L U

Main Memory

C P U

**Q6. three types of buses (2 mks \* 3 = 6mks)**

1. **Data Bus** - pathway where actual data transfer takes place
2. **Address bus** – pathway used to locate the storage position in memory where the next instruction data to be processed is stored
3. **Control Bus** – pathway for all timing and controlling functions sent by the control unit to other parts of the computer

 **b) input/output terms (2mks \* 2= 4mks)**

(i) **Read**- get (retrieve) data from memory e.g. opening a file/document

 (ii) **Write** – put data into memory e.g. saving a document

**c) BACKUP. (2mks)**

- This is storage of a copy of program or data in another place to be used if the original is lost or damaged

Q7.

1. **third generation computers and fourth generation computers**

|  |  |
| --- | --- |
| third generation | fourth generation |
| * used integrated circuits
* had no microprocessor
* used magnetic disks for storage
* had low storage capacities
 | * Use large scale integrated circuits
* Use microprocessor for processing
* Use optical disks for storage
* Have high storage capacities
 |

 Any Two correct award 2 mks \* 2=4 mks

 **b) Distinguish between Optical scanners and Magnetic scanners. (2mks)**

- Optical scanners capture data using optical or light technology, while magnetic ink scanner is used to capture data written using magnetic ink or coded onto a magnetic strip.

**c) Differentiate between hardware and software portability. (2mks)**

- Hardware portability refers to the ability of the computer to be carried from one place to another with ease. Software portability refers to the ability to install a program in two or more different computers families.

**d) Distinguish between an accumulator and an address register. (2mks)**

 - An accumulator is a register that holds the results of the last processing step of the

- ALU temporarily while address register temporarily holds next piece of data waiting to be processed.

1. **Explain the difference between Gas Plasma Display and liquid Crystal display monitors. (2mks)**
* LCD – monitor that use a special liquid called crystal to form images.
* Images formed on LCD suffer image distortion
* Gas plasma – Resemble LCD but use gas instead of liquid crystal to form images.
* Images displayed in gas plasma do not suffer from angle distortion.

**Q8.**

1. **Use of computers in law enforcement**

- Crime detection through biometric analysis.

* Store records of offenders.
* Communication between officials.
1. **Outline two factors to consider when purchasing computer hardware and software resources**

(2 mks )

. √ Cost

√ Portability

√ Compatibility

√ User friendliness

1. **State two disadvantages of magnetic tapes over compact disks (2mks)**

√ The IRG leads to wastage of vital storage space

√ Slower data retrieval since data is linearly stored in the tape

1. **State four practices to be observed in order to ensure the safety of the computer user. (4 mks)**

- Computer room should be well lit to avoid eye strain

 -Avoid over bright wall paints that reflect too much light causing eye strain

 -Adjust brightness of the computer monitor until the eyes feel comfortable before using the computer

 - Use/fit the monitor with radiation filter screens

 - Avoid using flickering monitor

 - Seat for the user must be comfortable and have a straight backrest that allows someone to sit upright

1. **e) List four advantages of optical disks over floppy diskettes (4 Marks)**
* Optical disks have larger storage area
- Data stored in optical disks is more stable and permanent
- Data stored in optical disks cannot be altered
* **Explain the difference between Gas Plasma Display and liquid Crystal display monitors.**

 (2mks)

LCD – monitor that are a special liquid called crystal.

Gas plasma – Resemble LCD but use gas instead of liquid crystal.

Images displayed in gas plasma do not suffer from angle distortion.