

**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)**

**Qualification Code** **:** 061006T4ICT

**Qualification** **:** ICT TECHNICIAN LEVEL 6

**Unit Code** **:** IT/OS/ICT/CR/6/6

**Unit of Competency** **:** Perform Computer Repair and Maintenance

**WRITTEN ASSESSMENT ASSESSOR’S GUIDE**

*(These only serves as a guide to expected responses.)*

**SECTION A: (40 MARKS)**

***All questions Attempted***

1. Define the term compute repair (2 Marks)

**Computer repair is the process of identifying, troubleshooting and resolving problems and issues in a faulty computer.**

(***Award 2 marks maximum 2 marks)***

1. Explain the term latency as used in magnetic disks. (2 marks)

**It is the delay waiting for the rotation of the disk to bring the required disk sector under the read-write head.**

(***Award 2 marks maximum 2 marks)***

1. Describe each of the following types of hard disk interfaces
2. IDE (2 marks)

**Integrated Drive Electronics refers to the hard disk drive that integrates the hard disk controller and the disk body. This approach reduces the number and length of cables for the hard disk interface, enhances the reliability of data transmission, and makes hard disk manufacturing easier**

1. SATA. (2 marks)

**It is an interface used to connect ATA hard drives to a computer's motherboard. SATA adopts serial connection mode. serial ATA bus uses embedded clock signal, which has stronger error correction ability.**

(***Award 2 marks for each maximum 4 marks)***

1. Computer technicians experience several challenges when carrying out routine  
   maintenance. Outline three challenges they could experience. (6 marks)
2. **Multiple Points of Contact**

**When something goes wrong and you need spare parts immediately You cannot immediately have the spare parts or computer parts you need because you have to go through a series of process, which delays the resolution to your problem**

1. **Specialized Skills**

**Technicians have the technical expertise, experience, and superior knowledge in providing maintenance support. However, they cannot diagnose and resolve issues across multiple-vendor platforms.**

1. **Various hardware maintenance needs**

**Each equipment has different hardware maintenance needs and different warranty expiration date.**

(***Award 2 marks for each maximum 6 marks)***

1. A lecturer described FAT 16 to a computer maintenance and support class. Outline  
   **SIX** disadvantages of FAT 16 that he could have mentioned. (6 marks)

* **No built-in file system security.**
* **No utility to compress files.**
* **Due to large cluster size, it wastes the storage space for larger drives.**
* **Root folder can manage maximum of 512 entries.**
* **File size more than 2GB cannot be created.**
* **Fixed number of clusters per partition.**

(***Award 1 mark maximum 6 marks)***

1. Harry was required to repair a client's monitor. List **FIVE** tools that he could use. (5 marks)

* **Cable tester**
* **Multimeter**
* **Pliers**
* **Wire cutter**
* **Screw drivers**

(***Award 1 mark for each maximum 5)***

1. Highlight SIX Functions of BIOS during POST (Power on Self-Test) (6 marks)

* **Check for the integrity of the BIOS code.**
* **Check for the size of the system memory and verify its integrity.**
* **Discover, initialize the list of all system buses and devices.**
* **Identify organize and select the devices for booting. The priority of the bootable devices can be clearly identified.**
* **Helps to start the Operating System.**
* **Display error codes or beep sounds if there is any problem with the device.**

(***Award 1 mark for each maximum 6)***

1. Elaborate the differences between duo core and quad core processor types. (6 marks)

* **Cores**

**A dual core processor is equipped with 2 numbers of cores and a quad core processor has 4 cores.**

* **Processing speed**

**The performing speed of a quad core processor is faster than a dual core processor.**

* **Multitasking ability**

**A quad core processor can easily handle four software whereas a dual core processor is able to easily and smoothly control 2 applications.**

* **Generated heat**

**A quad core processor generates more amounts of heat while running for a long time while the dual core processor generates minimal heat.**

* **Consumption of energy**

**A dual core processor consumes very less electricity than a quad core processor.**

* **Graphical ability**

**The quad core processors have more graphical ability than a dual core processor.**

* **Price**

**As the number of the cores gets increased, the price of the processors increases accordingly. Therefore, the price of a quad core processor is higher than a dual core processor.**

(***Award 1 mark maximum 6 marks)***

1. State **THREE** Causes of Overheating of Microprocessor. (3 marks)

* **Processor fan may not be properly connected.**
* **Heat sink may be not contacted with the processor.**
* **Jumpers may be configured to over clock the CPU.**
* **Voltage supply incompatible**

(***Award 1 marks maximum 3 marks)***

**SECTION B: (60 MARKS)**

***Note to assessor: These are suggested answers to act as guidelines***

***Only THREE questions attempted***

***Each question is 20 marks***

1. a) State the correct order in which you should install components into the case after disassembling a computer. (10 marks)

* **open the case**
* **install the power supply**
* **attach the components on the motherboard**
* **install the mother board**
* **install internal drives**
* **install drives in external bays**
* **install adapter cards**
* **connect all the internal cables**
* **re-attach the side panels**
* **connect external cables to the computer, boot the computer for the first time**

(***Award 1 mark for each maximum 10 marks)***

b) Explain the procedure of removing memory modules from a computer. (6 marks)

* **SIMM – gently push back the metal tabs while holding the SIMM chips in the socket. Tilt the SIMM chip away from the tabs until a 45% angle and It will lift out of the socket. Put SIMM in safe place.**
* **DIMM –Press the plastic tabs on the end of the DIMM tabs down and away from the socket. The DIMM will lift slightly. Now grab it by the edges and place it safely. Do not let the chips to get dust at all.**

(***Award 3 marks for each maximum 6 marks)***

c) Explain the following Error beeps of POST (Power-on Self-test). (4 marks)

1. **Short beep– Normal POST- System is OK.**
2. **2 short beeps– POST Error code is shown on screen.**
3. **No beep- Power supply or system board problem.**
4. **Continuous beep- Power supply, system board, or keyboard problem.**

(***Award 1 mark for each maximum 4 marks)***

1. a) Discuss in details four computer or devices testing techniques. (8 marks)

* **Unit testing**
* **Integration testing**
* **System testing**
* **Acceptance testing**

(***Award 2 marks for each maximum 8 marks)***

b) Explain SIX safety Precautions in assembly. (12 marks)

* **Fully shut down and unplug the computer before you make any attempts to disassemble the tower.**
* **Take off any metal objects on your arms or fingers such as bracelets, rings or watches. Even if your unit is unplugged, there may still be some remaining electric charge.**
* **Make sure your hands are completely dry to avoid damaging any mechanical parts as well as to avoid electrocution.**
* **Work in a cool area to avoid perspiration for the same reason as seen in the previous number.**
* **Before touching any part within the tower, put your hands against another metal surface (such as the computer casing) to remove static charge, which may damage sensitive devices.**
* **Prepare a place to keep any screws you may remove. A container or piece of paper with labels for each part (casing, motherboard, CD drive, etc) is ideal to avoid confusion between the similar-looking screws.**
* **Handle all parts with care. Place each piece you remove carefully down onto a stable surface.**
* **If a component does not come out easily, do not forcefully remove it. Instead, check that you are removing it correctly and that no wires or other parts are in the way.**
* **Be careful when holding the motherboard, it’s underside actually quite pointy and able to hurt you.**
* **Never attempt to remove the power source, a box attached to the side or bottom of the unit to which all cables are connected.**

(***Award 2 marks for each maximum 12 marks)***

1. a) Explain **THREE** types of motherboards. (6 marks)
2. **XT motherboard**

**The extended Technology motherboards are old model motherboards. Slot type processors, Low Insertion Force (LIF) sockets, DIMM RAM slots and ISA slots with 12 pin power connectors can be seen.**

1. **AT motherboard**

**Advanced Technology motherboards has Pin Grid Array (PGA) socket, SDRAM slots, 20 pin power connector, PCI slots, and ISA slots. Example: motherboard for Pentium 3 processors.**

1. **ATX motherboard**

**Advanced Technology extended motherboards are comparatively latest boards with MPGA processor sockets, DDR RAM slots, PCI slots, primary and secondary IDE interfaces, SATA connectors, 20 pin and 24 pin ATX power connectors and USB ports.**

b) Outline SEVEN factors that should be considered selecting a troubleshooting technique.

(14 marks)

* **Assessment of the risk involved** – The greater the risk involved the greater the need for more thorough testing.
* **Requirements of client** - Sometimes a client may demand a specific testing technique for his product.
* **Time and budget constraints** - The available time and the budget affect the choice of testing techniques.
* **Guidelines prescribed by the industry** - All industries have inter-nationally-accepted regulatory standards or guidelines that govern the testing techniques used. The chosen testing technique should fulfill all these requirements.
* **Sufficiency of documentation** - What type of testing documentation exists for a product; in what form it exists and whether it is updated or not influence the choice of testing technique.
* **Objective of the test** – Objective of test can be detection of a particular ‘bug’ in the product through the test; verification and validation of the product; gaining confidence that the product will be able to cope with typical operational tasks.
* **Software development lifecycle** –Software development lifecycle is a deciding factor in choosing testing methodology. A sequential life cycle model will lend itself to the use of more formal techniques whereas an iterative life cycle model may be better suited to using an exploratory testing approach.
* **Models used in developing the system** - Since testing techniques are based on models used to develop that system, they will to some extent govern which testing techniques can be used.
* **Experience of the tester** - Choosing the right testing methodology is a matter of experience. A knowledgeable and experienced tester can accurately decide the testing technique suitable for a program.
* **Need for flexibility** - A project might require some modifications along the way so it would require a testing methodology which has ample flexibility.

(***Award 2 marks for each maximum 14 marks)***

1. a) Explain the factors that have to be considered before attempting to upgrade a processor.

(8 marks)

* **BIOS support**
* **Voltage support**
* **Cooling**
* **Compatibility**

(***Award 2 marks for each maximum 8 marks)***

b) A failing power supply provides several symptoms before it actually fails completely. List some of the symptoms. (4 marks)

* **Spontaneous rebooting**
* **A noisy fan**
* **Fan stops turning.**
* **Electric shocks felt on the system case or connectors.**

(***Award 1 mark for each maximum 4 marks)***

c) Explain the functions of buses in computer. (8 marks)

* **Data sharing**
* **Addressing**
* **Power**
* **Timing**

(***Award 2 marks for each maximum 8 marks)***

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