MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)  
NQF LEVEL 3  
NOVEMBER 2009  
COMPUTER HARDWARE & SOFTWARE

This memorandum consists of 10 pages.
SECTION A

QUESTION 1

QUESTION 1.1

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QUESTION 1.2

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QUESTION 1.3

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(10 x 2) [20]

TOTAL SECTION A: 50
SECTION: B

QUESTION 2

2.1  2.1.1 HARDWARE

• The hardware of a computer can be seen as a skeleton.
• The physical structure which supports all the other computer elements.

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1) (2)

2.1.2 SOFTWARE

• A term for all the programmes which can be installed on a computer.
• The programmes that run on a computer system.
• Communicates with hardware to tell hardware devices what to do.

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1) (2)

2.1.3 FIRMWARE

• A special type of software which is written to read-only memory (ROM).
• Firmware rarely, if ever, needs to be changed.
• A kind of software that is embedded in a hardware device.

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1) (2)

2.2  2.2.1 ROM

• Read-only memory - to hold programme instructions that seldom, if ever, change.
• After turning off the computer’s power, the memory keeps it data permanently.
• Saves data permanently to a ROM device.

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1) (2)
2.2.2 RAM

- This is temporary storage with fast access speed compared to any other component.
- It holds data and programmes the CPU is busy working with.
- Contents of RAM are lost when the computer is switched off.
- Primary storage – directly connected to CPU.
- Computer can access the information in the RAM in a random order.

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1) [10]

QUESTION 3

3.1 PEER-TO-PEER NETWORK

- Four to five computers are connected.
- Each computer can communicate with the others.
- Devices can be shared.
- No dedicated fileserver is needed.
- Each computer can function as a fileserver for another computer.

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1) [2]

CLIENT-SERVER NETWORK

- It refers to the relationship between computers on a network.
- It is used for both local area and wide area networks.
- The client in a client-server network is the PC on the user’s desktop which is commonly called a workstation.
- The server in a client-server network is the fileserver or the computer that stores all the common data.

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1) [2]

3.2 3.2.1 REAL-TIME SYSTEMS

- Designed to respond quickly and accurately.
- There is no room for delay, no room for error.
- If it doesn’t work properly as soon as it is needed, the consequences may be serious.
- Embedded system – user cannot access the system to add additional commands or alter the functions.

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1) [2]
3.2.2 INTERACTIVE SYSTEMS

- It responds to the user, e.g., a GPS.
- Once you have entered the coordinates, the system will respond with directions to get you there.
- The way in which a user and computer interact with each other.
- It is an embedded and real-time system – do not have access to make changes to the way in which it operates; real-time - give directions in time for you to respond to them.

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1) 

(2)

3.2.3 BATCH SYSTEMS

- Processing that lets the user capture data when they have the time.
- This is an option where up-to-date information is not required at a moment's notice and it is also called batch processing.
- Check data for accuracy before updating their files.

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1) 

(2)

QUESTION 4

4.1 CPU

- It is the heart of the computer and this is where all the computing or processing takes place.
- It performs all arithmetic and logic operations and controls all other functions on the PC.
- The CPU is the component in charge of everything that happens on the PC.
- The CPU contains the instruction set, arithmetic logic unit, data paths, registers and cache.
- No program will load, no calculations will be made, no messages displayed without the approval of the CPU.
- When the PC is switched on, and power flows through the circuits, the first thing that the CPU does is to check the contents of the CMOS, it does this so that it knows what the system configuration is and what devices are attached.
- The CPU then checks the I/O devices for an operating system such as Windows XP or Linux or the Mac OS.
- The CMOS will have information that tells the CPU which devices to search, and in what sequence, when looking for the operating system.

OR ANY OTHER APPLICABLE ANSWER
(ANY 4 x 1) 

(4)
4.2 INTERNET

- Worldwide collection of computers, networks and gateways that use TCP/IP protocols to communicate with one another.
- High speed data communication lines.
- Offer a range of services to users, e.g., e-mail, Worldwide Web, FTP, Gopher, IRC, Telnet

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1)  

4.3 IP ADDRESS

- It is the address which is used to communicate with
- An I/O device.

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1)  

4.3 DHRYSTONE – Is used to test integer arithmetic performance.
WHETSTONE – Is used to test floating-point arithmetic performance.

QUESTION 5

5.1
- The area must be guarded against static.
- The area should be free of dust.
- The room should have controlled temperature and humidity.

OR ANY OTHER APPLICABLE ANSWER
(ANY 3 x 1)  

5.2 It is the process of exercising components of a system before they are placed in service.

OR
Testing a computer to check for errors before the computer leaves the factory.

QUESTION 6

6.1
- Check that all the steps of the installation were completed.
- All the system and application software is functioning correctly.
- All milestones were achieved.
- The user’s requirements have been met.
- The user signs off on the installation.

OR ANY OTHER APPLICABLE ANSWER
(ANY 2 x 1)  

6.2
- A file on the media, usually a CD that can be printed out or read on the PC monitor.
- Software that can be downloaded from the Internet.

(ANY 2 x 1)
6.3 • Reload the software ✓
• Restart the computer ✓
• Run the tests again ✓ (3) [10]

QUESTION 7

7.1 • Enter a few lines of data
• Save the data
• Close the programme
• Start the programme again and retrieve the file saved
• Print the data

OR ANY OTHER APPLICABLE ANSWER (5)

7.2 7.2.1 She doesn’t plan properly for her work and doesn’t carry any checklist that will help to ensure the preparation which will keep in mind the user requirements, e.g.
• All the information needed has been provided.
• The right tools and accessories get taken to the installation site.
• Adequate time is allowed for the installation.
• All the necessary software and documentation are taken to the site.
• Doesn’t estimate how much time would be needed for the installation which includes:
  • How far it is from your office to the installation site?
  • Is there any parking close to the installation site?
  • Is the office on the ground floor or in a multi story building?
  • If it is in a multi story building, are there lifts, or does the equipment have to be carried up stairs?
  • Will you have a colleague to help carry boxes, or will you need a trolley?
    Note that the time you need to install the equipment begins when you start to load the vehicle. It must include travelling to the installation site, unloading, unpacking equipment, setting up, testing, and cleaning up afterwards.
  • Do not forget to include the time for the trip back to your office.

OR ANY OTHER APPLICABLE ANSWER
(ANY 4 x 1) (4)

7.2.2 • She must do the feasibility of the specification.
• Ensure to provide all resources required for the installation to the site.
• She has to plan a review procedure to ensure that the final outcome meets the user requirements.

OR ANY OTHER APPLICABLE ANSWER
(ANY 1 x 1) (1) [10]
QUESTION 8

8.1  • The aim of the test
     • The features of the system to be tested
     • The features not to be tested
     • The approach or strategy to be used
     • Criteria to be used – particularly item pass or fail criteria
     • Test deliverables

8.2  • Scope of testing – what is to be tested, and what is not to be tested.
     • Schedule – when testing will start, what milestones will be used to
       measure progress and when testing will end.
     • Test deliverables – the documents and reports that will be presented to
       management and the client during the testing process and at the end of
       the test.
     • Release criteria – these are the details of tests that should be passed,
       and at which level to allow for release of the system.
     • Risks and contingencies – list any risks involved, such as possible staff
       shortages or non-delivery of third party product.

OR ANY OTHER APPLICABLE ANSWER
(ANY 4 x 1)

QUESTION 9

9.1  • Heat or magnetism and excessive build-up of dust.
     • Static electricity, power surges and lightning.
     • Carelessness, such as spilling liquids onto a computer.
     • Bumping or dropping the computer.
     • Computers set up in high traffic areas are potential problems.
     • Viruses either picked up from the Internet or spread from storage media
       shared between different computers.
     • A computer upgrade that has not been done or was done incorrectly.

OR ANY OTHER APPLICABLE ANSWER
(ANY 3 x 1)

9.2  • Always turn off and unplug a computer when it is not in use.
     • A computer must always be disconnected from the plug when repairing or
       replacing a component.
     • Treat every connection as if it were alive.
     • Buy a longer cable rather than trying to splice two cables together.
     • Never open the transformer or try to repair wires.

OR ANY OTHER APPLICABLE ANSWER
(ANY 3 x 1)
QUESTION 10

10.1 • Get prices on components to be replaced.
• It is a good idea to get more than one price so the user has a choice.
• Estimate how much time will be needed for the repair.
• Establish what other resources will be needed.
• Form an opinion about the benefits and feasibility of the repair.
• Submit the report to the user and to your manager, if necessary.
• The benefits of the proposed solution should be clearly stated in the report.
• If two or more solutions are possible, indicate the benefits and costs for each possible solution.

(ANY 5 x 1) [5]

QUESTION 11

11.1 • The symptoms reported and the events leading up to them.
• Which knowledge bases you have searched?
• Which suppliers you have spoken to?
• Which manufacturers you have contacted?
OR ANY OTHER APPLICABLE ANSWER
(ANY 4 x 1) [4]

11.2 Pushing a problem to a higher and higher level of expertise [1]

QUESTION 12

12.1 • Define the problem
• Gather data and evidence
• Identify the issues that contribute to the problem
• Find the root causes
• Develop recommendations for possible solutions
• Implement the selected solution
• Monitor the solutions to ensure its effectiveness

(ANY 5 x 1) [5]

QUESTION 13

13.1 • Technical manuals
• Knowledge bases
• Information logs
• Supplier support staff
• Manufacturers technical staff
OR ANY OTHER APPLICABLE ANSWER
(ANY 5 x 1) [5]
13.2  
• Software may have to be installed.
• A badly inserted component may have worked loose during delivery.
• Network settings may have to be checked.
• Network configuration may have to be checked.
• The user must have an opportunity to try the system before signing off on the fault repair.

OR ANY OTHER APPLICABLE ANSWER
(ANY 5 x 1)  

(5)  

[10]  

TOTAL SECTION B: 100  

GRAND TOTAL: 150