higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

COMPUTER HARDWARE AND SOFTWARE
NQF LEVEL 3

(10041013)

26 February 2018 (X-Paper)
09:00–12:00

This question paper consists of 11 pages.

NCV

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TIME: 3 HOURS
MARKS: 150

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Write neatly and legibly.

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SECTION A

QUESTION 1

Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (1.1–1.10) in the ANSWER BOOK.

1.1 A hazard is something that can be dangerous or cause accidents or problems.

1.2 The best way to troubleshoot efficiently is to work carefully and systematically through technical problems.

1.3 Hard faults refer to faults that are difficult to diagnose.

1.4 A system refers to a group of related parts that work together as whole for a particular purpose.

1.5 A specification plan describes what features the computer will have once it is built.

1.6 A milestone does not need to have an operating system and internet connection installed and configured within a specific timeframe.

1.7 A problem-solving technique is a traditional way of solving problems.

1.8 A computer system is made up of both hardware and software.

1.9 Mainframes are very large computers designed to be used by several users at the same time.

1.10 PC hardware components are called firmware.

(10 × 1) **[10]**

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QUESTION 2

Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–C) next to the question number (2.1–2.10) in the ANSWER BOOK.

2.1 The process of testing working components by running a computer program that tells you if the component is working as the manufacturer intended it to work:

A Benchmarking
B Installation
C Operation

2.2 A person who has an interest in a project:

A Consultant
B Organiser
C Stakeholder

2.3 A document, either manual or on a computer, in which test events are listed:

A Hardware test
B Test script
C Unit test

2.4 … is important because different manufacturers make different computer parts that need to work together.

A Compatibility
B Warranty
C Integrity

2.5 A/An … connects the earth pin of a wall socket with a band around your wrist.

A computer technician's toolkit
B compressed air strap
C antistatic wrist strap

2.6 A process that computer technicians go through when they have finished installing a computer system:

A Pre-installation environment
B User acceptance sign-off
C Dispatch procedure

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2.7 Involves maintaining a component in good working order to prevent expensive or time-consuming repairs when the component breaks:

A Maintenance
B Environmental damage
C Preventative maintenance

2.8 A set amount of time to get something done:

A Third part
B Parameters
C Timeframe

2.9 To install software on computers, especially those in a network, you need to have …

A a toolkit.
B administrator privileges.
C an antistatic wrist strap.

2.10 The ability of a computer to process different applications at the same time:

A Microprocessing
B Multiprocessing
C Single processing

(10 × 1) **[10]**

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QUESTION 3

Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–O) next to the question number (3.1–3.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
3.1	Installing hardware and software as well as troubleshooting problems for users	A	peer-to-peer network
3.2	Used to create custom music CDs and to store data	B	random-access memory
3.3	Consists of one central node, typically a switch or hub, which transmits messages	C	server
3.4	Process of converting from digital to analogue	D	star network
3.5	Maintains the time, date, hard disk and other configuration settings in the CMOS memory	E	computer technicians
3.6	Network that is created when two or more PCs are connected and share resources without going through a separate server computer	F	CMOS battery
3.7	Manage resources, provide a user interface and run application programs	G	modulation
3.8	Chips that hold the program and data that the CPU is presently processing	H	operating systems
3.9	Use laser technology and have the greatest capacity	I	hard drive
3.10	Computer or computer program that manages access to a centralised resource or service in a network	J	optical disks
		K	smart terminal
		L	internet terminal
		M	motherhood
		N	PDA
		O	compact disk

(10 × 1) **[10]**

TOTAL SECTION A: 30

SECTION B

QUESTION 4

4.1 Briefly explain the environmental requirements of personal computers with regard to each of the following possible environmental threats:

4.1.1 Moisture

4.1.2 Lightning

4.1.3 Temperature

4.1.4 Dust

4.1.5 Magnetism

(5 × 2) (10)

4.2 An instruction set is a group of commands for a CPU written in machine language. The term can refer to all possible instructions for a CPU or a subset of instructions to enhance its performance in certain situations.

4.2.1 Name and explain FOUR types of instructions that make up an instruction set. (4 × 2) (8)

4.2.2 Name FIVE processor design constraints. (5)

4.2.3 Name TWO types of computer buses. (2)

[25]

QUESTION 5

Computers can be grouped into categories according to their physical size and performance.

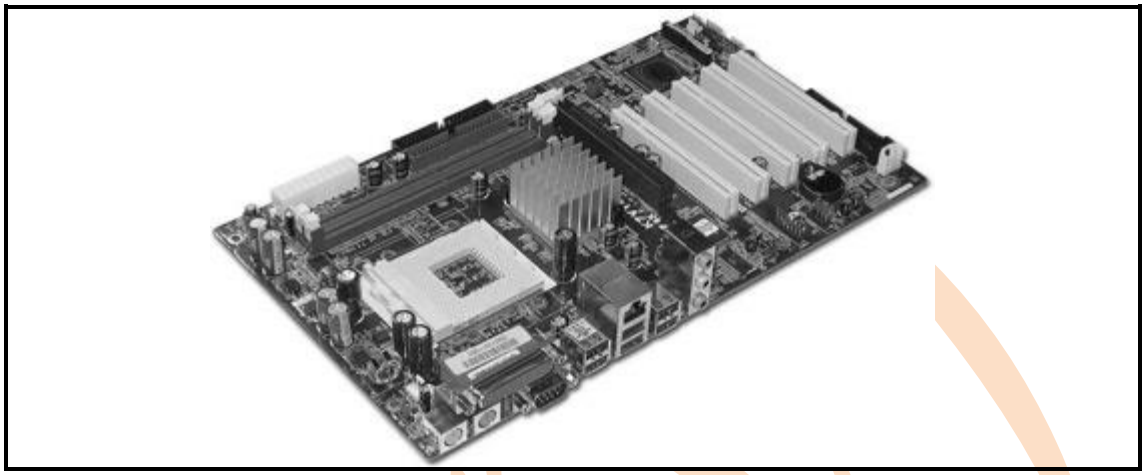
5.1 Name THREE main types of computers according to their physical size classification. (3)

5.2 Discuss the difference between a *peer-to-peer network* and *client server network.* (4)

[7]

QUESTION 6

Study the image below carefully and answer the questions.



6.1 What is the name of the computer component shown above? (1)

6.2 What are the primary functions of the component shown in the image above? (4)

6.3 List and briefly explain the FOUR main functions of the BIOS chipset. (4 × 2) (8)

[13]

QUESTION 7

7.1 Explain the term *dispatch procedure.* (2)

7.2 You need to consider a number of aspects in order to successfully assess the feasibility of a computer assembly specification plan.

Give THREE questions that need to be answered to determine the feasibility of a computer assembly or design. (3)

[5]

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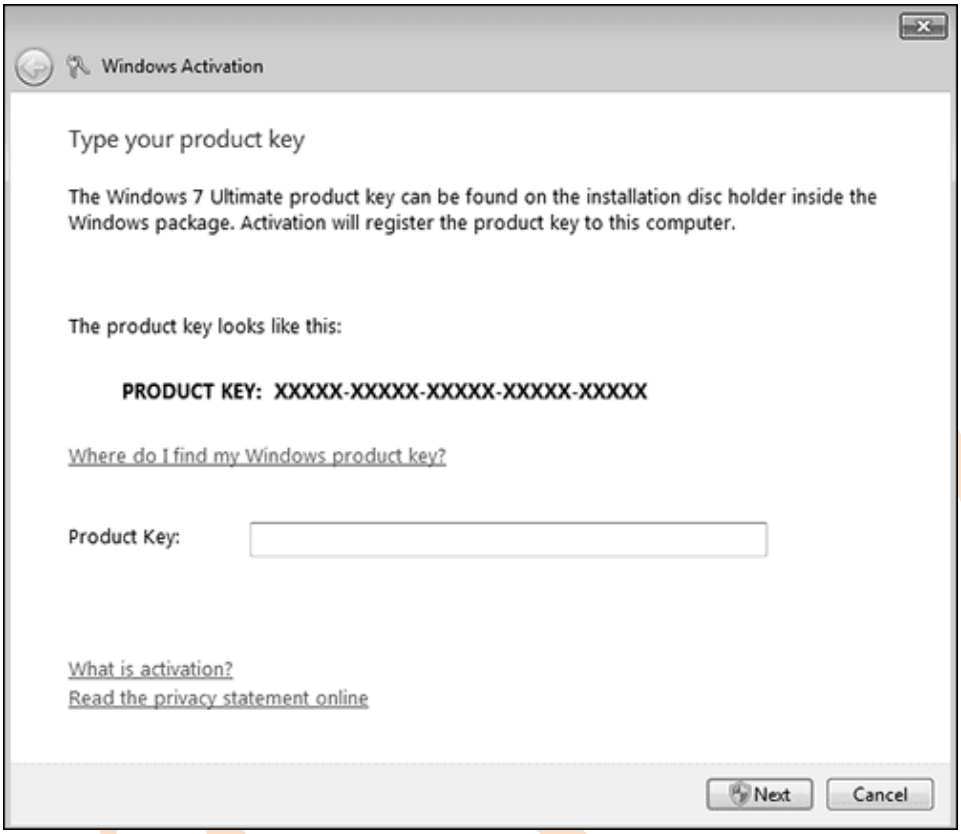
QUESTION 8

Study the screenshot below carefully and answer the questions.



8.1 Describe what is depicted in the screenshot above. (2)

8.2 Briefly explain what the user in the screenshot above is trying to do. (2)

8.3 Define the term *software piracy.* (2)

8.4 Give FOUR reasons why system software installations may fail. (4)
[10]

QUESTION 9

9.1 The steps below must be followed when performing single-user PC assembling.

Rearrange the steps in the order they need to be performed to ensure that the assembly conforms to the manufacturer's specifications.

A Attach the CPU to the motherboard and clip the RAM into the motherboard.

B Make sure that all the components and tools needed are nearby in the work area.

C Put on an antistatic wrist strap.

D Ensure that there is a suitable work area for the assembly.

E Place the motherboard into the computer case. (5)

9.2 List FIVE resources or tools needed to perform a computer hardware installation. (5)

[10]

QUESTION 10

10.1 Name FIVE risks to consider when planning the testing of IT systems. (5)

10.2 Name the types of tests that may be done when testing IT systems. (3)

10.3 Compare *load testing* and *sanity testing*. (2)

10.4 List FIVE precautions to prevent electrostatic discharge. (5)

10.5 Give THREE reasons why it is important for any company's IT department to use preventative maintenance. (3)

10.6 Name any TWO classes of fire categories found in South Africa. (2)

[20]

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QUESTION 11

11.1 Computer problems arise from a number of factors. In order to resolve these problems, computer technicians engage in troubleshooting.

Name FIVE methods that computer technicians should consider when performing troubleshooting. (5)

11.2 List FIVE steps in problem solving. (5)

11.3 List FIVE problem-solving techniques. (5)
[15]

QUESTION 12

12.1 Your college has published an internal advertisement for a 12-month internship programme for five computer technicians to be employed in the college's IT department. One of the main duties of the computer technicians will be to install upgrades and configure new computers and printers.

You applied for the programme because you know that this is an opportunity to gain the much needed experience to be employable in future. You arrive for your interview on the date, time and venue stipulated by the college.

The college's IT specialist tells you that you have to install a new printer for one stand-alone PC as part of the practical interview. A work area and all resources needed have been prepared. All you have to do is to install a printer and prove to the IT specialist that the printer works as intended.

12.1.1 List the steps to follow when installing a new printer. (7)

12.1.2 How can you prove that the printer works as intended? (2)

12.1.3 Explain the term *device driver*. (1)

12.2 State FIVE factors to consider when maintenance is performed. (5)
[15]

TOTAL SECTION B: 120
GRAND TOTAL: 150

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