higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

COMPUTER PRINCIPLES N4

(6040034)

2 December 2022 (X-paper)
09:00–12:00

This question paper consists of 8 pages.

314Q1E2202

Copyright reserved

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
COMPUTER PRINCIPLES N4
TIME: 3 HOURS
MARKS: 100

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. Use only a blue or black pen.
5. The flow chart should be neat and clear and may be done in pencil.
6. Write neatly and legibly.

Copyright reserved

QUESTION 1

Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1–1.5) in the ANSWER BOOK.

1.1 A … is the smallest unit of data that a binary computer can recognise.

A byte
B pixel
C bit
D date

1.2 An ultra-mobile PC is also called a … computer.

A mini-
B hand-held
C range
D frame

1.3 A … memory has L1, L2 and L3 levels of storage.

A RAM
B ROM
C cache
D flash

1.4 Computers count with … numbers.

A regular
B binary
C decimal
D digital

1.5 Programming languages come in many varieties, for example BASIC, Visual Basic, Pascal, COBOL, C++ and …

A Pdf.
B Java.
C Restore.
D TCP.

1.6 A computer's … is the amount of data (measured in bits or bytes) that a CPU can manipulate at one time.

A clock speed
B throughput
C machine cycle
D memory

Copyright reserved

1.7 The four-step process of fetch, decode, execute and store is called a(n) …

A arithmetic operation.
B machine cycle.
C instruction cycle.
D logical operation.

1.8 The … operating system was the first to use 64-bit technology.

A Mac OS X
B MS-DOS
C Linux
D Windows XP

1.9 Common input devices include the keyboard and …

A printer.
B mouse.
C speaker.
D monitor.

1.10 RAM stands for … memory.

A rapidly accessed
B reliable associated
C repeated auxiliary
D random access

(10 × 1) **[10]**

QUESTION 2

Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (2.1–2.5) in the ANSWER BOOK.

2.1 Uninterruptible power supply provides additional power during outages or electrical current fluctuations.

2.2 Computer programmers are the people who use a computer to obtain information.

2.3 The Internet service provider is the largest and most well-known computer network in the world.

2.4 Early computers required programs to be written in machine language.

2.5 Read-only memory, also called main memory, is used to store the essential parts of the operating system while the computer is running.

(5 × 2) **[10]**

QUESTION 3

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

COLUMN A		COLUMN B	
3.1	Referred to as the brain of the computer	A	program
3.2	A hardware component of a computer system that contains the electronics to connect the computer to the network	B	operating system
3.3	Unauthorised reproduction and distribution of computer-based media	C	virtual memory
3.4	A set of instructions that tells a computer how to perform a process	D	spreadsheet software
3.5	High-speed temporary memory that holds programs and data in use	E	application software
3.6	The collection of programs that provides the infrastructure for other programs to function properly	F	netbook
3.7	A collection of programs that together perform a specific task for the user	G	CPU
3.8	The matching of computer components to fit an individual's posture and body design	H	digital piracy
3.9	A computer system in which the system unit and monitor are combined to reduce the space needed to hold the system	I	ergonomics
3.10	Temporary use of the hard drive to hold programs and data in use	J	RAM
		K	network interface card
		L	printer
		M	scanner

(10 × 1) **[10]**

QUESTION 4

4.1 The stack is part of the computer memory.

What is the stack used for?

4.2 Interrupts play an important role in computer operations.

Name TWO types of software interrupts.

4.3 Loops within a BASIC program enable the execution of a small program to be repeated several times.

Give the TWO instructions associated with BASIC loops.

4.4 The description, SOFTWARE DEVELOPMENT, has to be printed on a report form.

Write the complete BASIC statement.

4.5 Documentation plays a role in using and developing computer software.

What is the purpose of internal documentation when associated with a software programmer?

(5 × 2) **[10]**

QUESTION 5

Study the following advertisements and answer the questions.

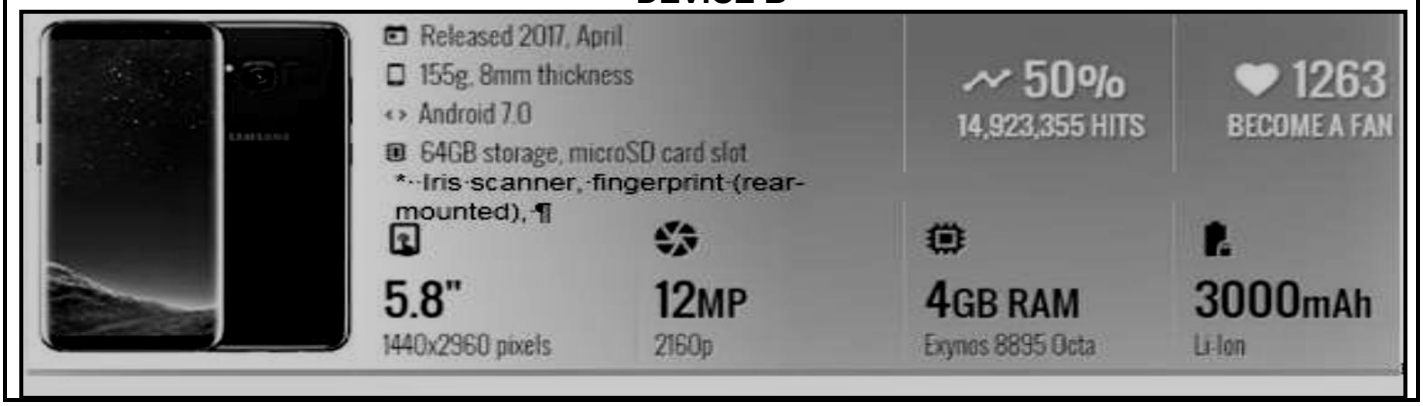
DEVICE A



A stylish all-in-one with a stunning screen

- 196 × 196 × 36 mm
- VGA and HDMI output
- Quad-Core i7
- Intel Iris Graphics 6000
- Crucial 8GB DDR4-2133 MHz
- 1TB WD Blue 7200RPM Hard Drive
- 3 TB SSD
- Wireless: 802.11ac, Bluetooth 4.0
- Mac OS Sierra 10

DEVICE B



5.1 What does each of the following acronyms stand for?

5.1.1 VGA

5.1.2 RAM

(2 × 2) (4)

5.2 Name TWO hardware components, other than the hard drive, that are most important for the effective working of a computer, Device A. (2 × 2) (4)

5.3 Give TWO reasons why adding more RAM to a computer can improve the overall system performance of the computer. (2)

5.4 Give FOUR reasons why solid-state drives (SSDs) will in future replace hard disk drives as the main storage device of a computer. (4)

5.5 Give TWO benefits of buying Device A, which is an 'all-in-one' computer. (2)

5.6 What is the capacity of the internal memory of Device B? (1)

5.7 Name ONE biometric feature of Device B as listed in the advert. (1)

5.8 Name TWO ways in which photos can be transferred from Device B to a desktop computer. (2)

[20]

QUESTION 6

Read the following passage and answer the questions.

MODULAR MONOLITHIC – A GATEWAY TO MICROSERVICES

Monolithic architecture has become nearly synonymous with cobbled, messy code that is difficult to maintain — a 'big ball of mud' is a nickname popularised in a talk by Brian Foote and Joseph Yoder some years ago in 1997. But cobbled and messy is not a requirement. Monolithic typically just means that the code for a system is in a single codebase that is compiled together and produces a single artefact. By this definition, monolithic is more about packaging and distribution than it is about the level of modularity, coupling or defined interfaces.

Consider a typical web application with a 3-tier layered architecture. There is a web layer, app or business logic layer and a database access layer. A common Java packaging scheme would be to group the web content, the business logic routines and the database access routines into separate layered packages.

[Source: Adapted from: *https://medium.com/design-and-tech-co/*]

6.1 Java and BASIC are high-level programming languages.

What is a low-level programming language? (2)

6.2 Give TWO examples of low-level languages. (2)

6.3 Name THREE layers of a web application. (3)

6.4 Describe the following programming structure methods as applied to the computer industry:

6.4.1 Monolithic program structure

6.4.2 Modular program structure

(2 × 2) (4)

[11]

QUESTION 7

7.1 Write brief notes on a super computer found in industry. (4)

7.2 Name FIVE of the environmental factors that need to be controlled in a computer room. (5)

7.3 Differentiate between the following types of communication that take place in a computer:

7.3.1 Serial communication

7.3.2 Parallel communication

(2 × 3) (6)

[15]

QUESTION 8

Read the following and answer the questions.

A PROGRAM THAT CONVERTS MILES INTO KILOMETRES

The problem to be solved: Convert the distance in miles and output to the equivalent distance in kilometres.

Hint: 1 mile = 1,61 km

What the program does:
1. INPUT number of miles
2. Calculate the number of km
3. OUTPUT calculated results in km

8.1 Draw the flow chart for the program. (6)

8.2 Generate the BASIC code for the above program. (8)

[14]

TOTAL: 100

Copyright reserved