higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

INTRODUCTION TO SYSTEMS DEVELOPMENT
(First paper)
NQF LEVEL 2

(10041022)

18 November 2022 (X-paper)
09:00–11:00

This question paper consists of 9 pages.

531Q1N2218

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TIME: 2 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. Start each section on a new page.
5. Use only a blue or black pen.
6. Write neatly and legibly.

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SECTION A

QUESTION 1

Various options are given as possible answers to the following questions. Choose the correct answer and write only the letter (A–D) next to the question number (1.1–1.10) in the ANSWER BOOK.

1.1 … performs a specific task for the end user.

A System software
B Application software
C Utility software
D Proprietary software

1.2 Which ONE of the following is not an example of a proprietary operating system?

A UNIX
B MAC OS
C NetWare
D Microsoft Windows

1.3 An integrated development environment is used to translate languages such as …

A JavaScript and HTML.
B C++ and PHP.
C Python and VB.
D COBOL and SQL.

1.4 In …, software developers became aware of a software crisis as hardware and software become increasingly complex.

A 1822
B the 1800s
C 1945
D the 1960s

1.5 Computers use the … where there are only two possible values, namely 0 and 1.

A decimal number system
B binary number system
C binary digits
D ASCII codes

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1.6 The process for solving a problem will initially involve …

A analysing the problem.
B defining the problem.
C devising the solution.
D investigating how the problem occurred.

1.7 Find the range with the given data set:
23, 34, 56, 12, 23, 34, 56, 78, 90, 23, 12, 23, 23, 45

A 90
B 56
C 78
D 84

1.8 The IF-THEN-ELSE selection structure is used to …

A choose a condition only if the condition is TRUE, otherwise it performs a different statement.
B choose among alternative courses of action.
C repeat a certain action for a predetermined number of times.
D analyse a problem and then break it down into individual processes.

1.9 A 'not equal to' (<>) operator tests …

A if two values are equal.
B by comparing two variables to each other.
C if the value on the left-hand side of the operator is at least equal to or greater than the value on the right side of the operator.
D whether two values are not equal.

1.10 Which ONE of the following is a basic principle of indentation?

A The code is not written in a structured way.
B Describe what the programmer is trying to achieve.
C Ensure that the indentation style is consistent throughout the program.
D Most of the indentation is done automatically.

(10 × 1) **[10]**

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QUESTION 2

Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–L) next to the question number (2.1–2.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
2.1	Tools used by software developers to develop and test new software	A	association
2.2	A way of interacting with a computer program	B	online storage
2.3	Hiding and restricting access to an object's resources	C	syntax checking
2.4	Refers to a specific type of class	D	mean
2.5	Storing data on remote servers	E	software tools
2.6	Finds solutions by analysing systems and procedures	F	output
2.7	Calculated by adding all the values in the data range and then dividing it by the number of items in the range	G	encapsulation
2.8	The results of processing data	H	debugging
2.9	When programmers locate and fix errors in the code	I	object
2.10	The ability to test whether the source code is correct in a given programming language	J	command-line interface
		K	tool box
		L	mode

(10 × 1) **[10]**

TOTAL SECTION A: 20

SECTION B

QUESTION 3

Study the passage below and answer the questions that follow:

BASIC SOFTWARE CONCEPTS



Over recent years, classifying applications according to computing platforms has become more difficult. A platform is the combination of hardware and software required to make an application run. In the past, the type of software running on a computer depended on the operating system, for example, some software works with a Windows operating system; other software only works with an iOS or Unix system. That has changed, however. New developments in software resulted in many applications no longer relying on a specific operating system. It now runs on the web and can be accessed through a browser.

[Source: *https://intl.siyavula.com/read/cat/grade-10-cat/computer-software/07-computer-software*]

3.1 Define the following terms:

3.1.1 Proprietary software

3.1.2 Open-source software

(2 × 2) (4)

3.2 List FIVE different types of application software. (5)

3.3 Name and explain any TWO types of system software. (2 × 2) (4)

3.4 Indicate whether the following statement is TRUE or FALSE:

An operating system is system software that manages computer hardware and software resources, and provides common services for computer programs. (1)

[14]

QUESTION 4

4.1 HTML consist of THREE kinds of codes. Name these codes. (3)

4.2 In the table below, the names of high-level programming languages are given. Copy and complete the table by writing down the description and the typical use of each high-level programming language in the ANSWER BOOK.

Name	Description	Typical use
C		
C++		
Java		
PHP		
Python		
Delphi Embarcadero		

(6 × 2) (12)

[15]

QUESTION 5

5.1 The data type defines which operations can safely be performed to create, transform and use the variable in another computation. When a program language requires a variable to only be used in ways that respect its data type, that language is said to be strongly typed.

Name and explain FOUR common data types. (4 × 2) (8)

5.2 What does the acronym ASCII stand for? (2)

[10]

QUESTION 6

6.1 Problem-solving processes consist of a sequence of steps that needs to be followed in order to arrive at a solution for a problem.

List the FIVE steps of the problem-solving process. (5)

6.2 Most programs will involve some mathematical processing of data. Sometimes the processes are not obvious and will require lateral thinking on the part of the programmer.

Given below are normal mathematical operators. Indicate their equivalents in pseudocode:

6.2.1 5^4

6.2.2 8 × 5

6.2.3 $\frac{200}{5}$

6.2.4 AND, OR, NOT

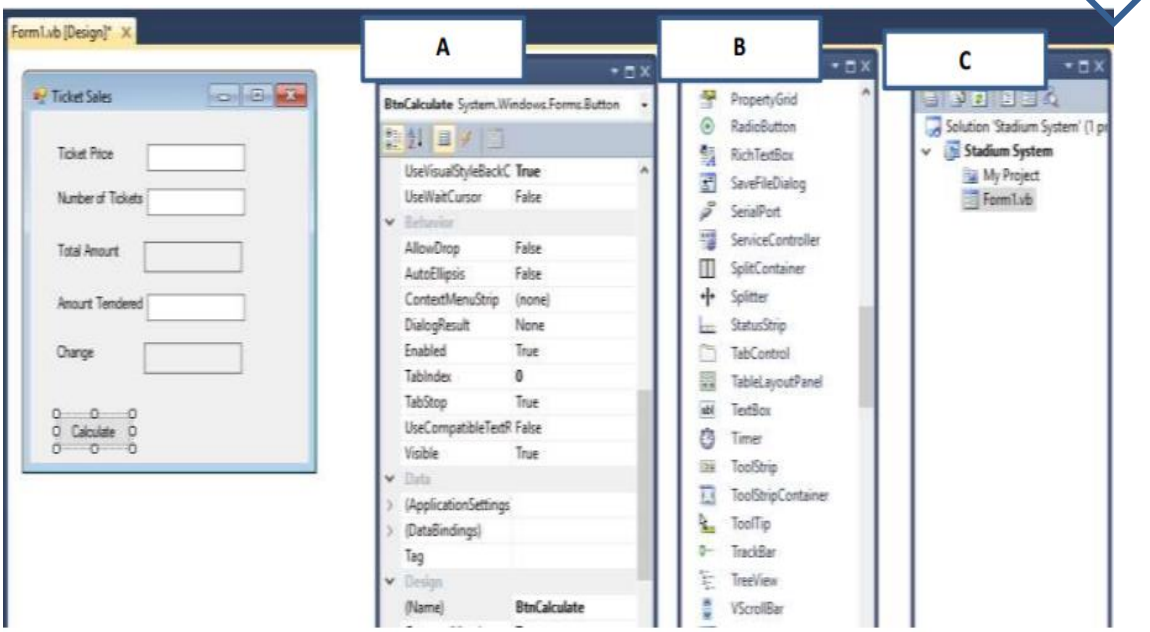
6.2.5 √60

(5 × 1) (5)

6.3 Define *flow chart.* (2)

6.4 List FOUR different types of data structures used in an algorithm. (4)

6.5 Study the screenshot below and answer the questions that follow:



6.5.1 Identify the windows labelled A, B and C on the screenshot above. (3)

6.5.2 What does window B contain? (2)

6.5.3 Identify the 'BtnCalculate' that appears at the bottom of window A. (2)

6.5.4 Draw the IPO chart of the program above. (6)

6.5.5 What is the name of the program in window C? (1)

6.5.6 What text can be written in the properties of the *Calculate*-button to create a shortcut to that button? (1)

6.5.7 How many forms does this program have? (1)

[32]

QUESTION 7

7.1 Quality assurance is a process-driven activity of suggesting and executing procedures or standards based on available management models.

Identify THREE activities involved in the quality assurance process. (3)

7.2 Name and explain THREE methods used in quality assurance. (6)
[9]

TOTAL SECTION B: 80
GRAND TOTAL: 100

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