higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

BASIC PRINCIPLES OF COMPUTER PROGRAMMING AND COMPUTER LITERACY

(First paper)

NQF LEVEL 2

20 November 2024

This marking guideline consists of 7 pages.

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SECTION A

QUESTION 1

1.1 B
1.2 C
1.3 B
1.4 C
1.5 C
1.6 D
1.7 B
1.8 A
1.9 A
1.10 C

(10 × 1) **[10]**

QUESTION 2

2.1 False
2.2 False
2.3 True
2.4 True
2.5 True

(5 × 1) **[5]**

QUESTION 3

3.1 C
3.2 L
3.3 J
3.4 I
3.5 E
3.6 K
3.7 B
3.8 G
3.9 A
3.10 H

(10 × 1) **[10]**

QUESTION 4

4.1 dir
4.2 Byte
4.3 Abstraction
4.4 Scope
4.5 Reusability

(5 × 1) **[5]**

TOTAL SECTION A: 30

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SECTION B

QUESTION 5

5.1 5.1.1 Monitor / Screen
5.1.2 Scanner / QR code scanner
5.1.3 Mouse
5.1.4 Printer
5.1.5 Hard disk drive / HDD

(5 × 1) (5)

5.2 A single-board computer is a complete computer with processor, memory, input/output functions and other features that are built on a single circuit board.✓✓ (2)

5.3 5.3.1 **rename✓ AssessmentRecord.xlsx Marks.xlsx✓**

OR

ren AssessmentRecord.xlsx Marks.xlsx

(Allocate 1 mark for the command and 1 mark for the correct file names.) (Any 1 × 2) (2)

5.3.2 **copy "Test2.docx"✓ "C:\Users\i5\Documents\BPCL L2\Tests"✓**

(Allocate 1 mark for the command and 1 mark for the correct file path.) (2)

5.3.3 **md Results** (1)

5.3.4 **systeminfo** (1)

[13]

QUESTION 6

6.1 Phases of the PDLC

1. Problem/Requirements analysis✓ – After a discussion with the client, we draw up a list of requirements for the software. The client's requirements are then analysed and translated into technical requirements that we use in the next phase.✓
2. Design✓ – We design a solution to the identified problem by using the technical requirements gathered in the previous phase. The solution is designed using an appropriate algorithm, which we represent by using IPO charts, flow charts or pseudocode.✓
3. Implementation/Coding✓– We choose an appropriate programming language to code our solution. The design of the solution from the previous phase becomes the input to this phase. The developer uses the design and creates the code in the programming language based on each step of the design document.✓
4. Testing✓ – Testing is performed in two parts. Firstly, the code is tested to ensure that there are no syntax or logical errors. Secondly, the software is tested to ensure that the client's requirements are met. It is important that the program solves the intended problem.✓
5. Deployment/maintenance✓ – Once the client is satisfied with the software, it can be installed in the client's organisation. This last phase is ongoing, as support needs to be provided to the client for the duration of the client's use of the software. If the client wishes to upgrade the software, the process of the PDLC is followed again from Phase 1.✓

(Allocate 1 mark each for listing the 5 phases and 1 mark each for the explanation of the phase.) (5 × 2) (10)

6.2 6.2.1 Timestamp✓ and Author✓ (2)

6.2.2 Repository (1)

6.2.3

BRANCH	TRUNK
A secondary line of development.	Main area of development.
Changes made need to be tested and then merged with the trunk.	Changes made are always updated to the trunk.
The update is made to the original software and is usually released as a new version of the software.	It is the main version or major release of the software package.

(Allocate 2 marks each for any TWO differences provided for *Branch* and *Trunk*. (Any 2 × 2) (4)

[17]

QUESTION 7

7.1 **8 % 2 < 5 OR NOT (4 * 4 == 16)**
0 < 5 OR NOT (16 == 16)✓
True OR NOT True✓
True OR False✓
True✓ (4)

7.2 Convert **175_{10}** to binary

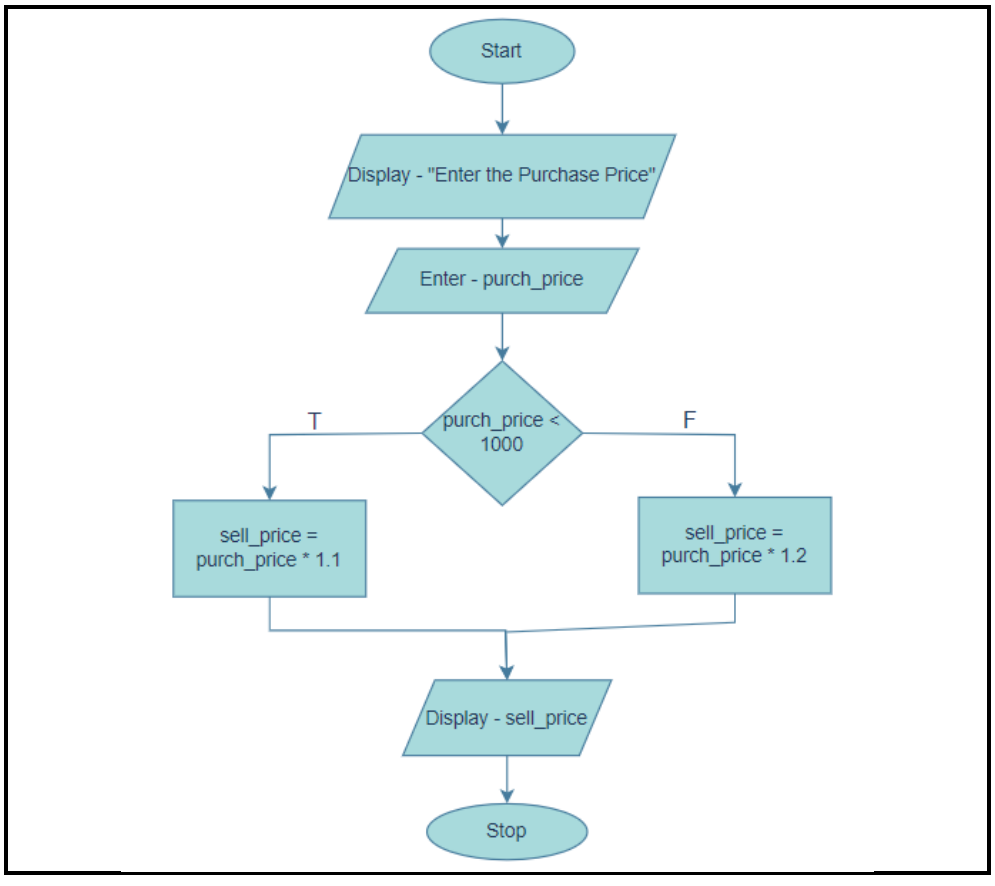
175 ÷ 2	1✓
87 ÷ 2	1
43 ÷ 2	1
21 ÷ 2	1
10	1
5	0✓
2	1
1	0
0	1✓

175_{10} = 10101111_2✓

(Allocate 3 marks for the calculation and 1 mark for the final answer) (4)

7.3 7.3.1 Input Processing Output (1)

7.3.2



Allocate 1 mark each as follows:

- Terminal symbols✓
- Input✓
- Decision box with correct condition✓
- Setting the correct sell_price if True✓
- Setting the correct sell_price if False✓
- Displaying the selling price✓ (6)

7.4 7.4.1 Advantages of Scratch

- Easy to get started with programming.
- Great way to learn the basics of coding.
- Fun way of learning problem solving and applying computational thinking.
- Simple applications/games can be created in a short time.

(Allocate 1 mark for any appropriate TWO advantages listed)✓✓
(Any 2 × 1) (2)

7.4.2 sum✓ and count✓ (2)

7.4.3 The program is finding the sum✓ of the first 10 numbers (1 – 10).✓ (2)

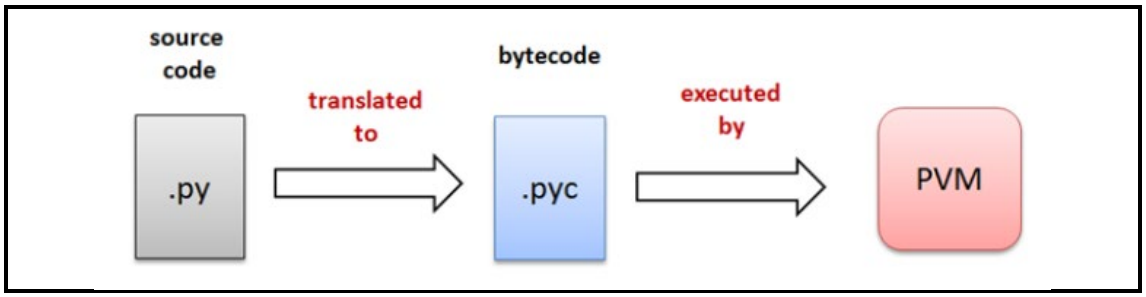
7.4.4 55 (1)
[22]

QUESTION 8

8.1 8.1.1 Comments are statements that are included in a program to explain what the code does.✓ Comments are not understood or executed by the computer.✓ (2)

8.1.2 Comment symbols used in Python: **#** OR **“”” “”””** OR **''' '''**✓ (1)

8.2 Python's traditional runtime execution model:



PYTHON RUNTIME EXECUTION MODEL✓✓✓

The Python runtime execution model can be summarised by the figure above:

- A Python program is written in Python source code. The file is saved with a .py extension. ✓
- The Python interpreter then translates the source code into bytecode. The bytecode is saved with a .pyc extension. ✓
- Python has a built-in virtual machine called the Python virtual machine (PVM). This is where the bytecode is executed, line by line.✓

(Allocate 1 mark for each stage in the three stages depicted in the diagram of the model (3)✓✓✓
and allocate 1 mark for each description of the stages (3) ✓✓✓ (6)

8.3 8.3.1 math

8.3.2 Line 2: #Declaring local variables and getting inputs for radius and height.
(Also accept any other appropriate comment that describes lines 3 and 4.)

8.3.3 The purpose is to convert the input to a float value.

8.3.4 calc()

8.3.5 Line 14

8.3.6 The program prompts the user for the radius and height of a cylinder. The program calculates and displays the volume of the cylinder using a user defined function and math functions.

8.3.7 It is to format the output to 2 decimal places.

(7 × 1) (7)

8.4 Examples: Lists, Arrays, Dictionaries, Sets, Tuples✓✓
(Allocate 1 mark for each example, maximum 2 marks) (Any 2 × 1) (2)
[18]

TOTAL SECTION B: 70
GRAND TOTAL: 100

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