higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

INTRODUCTION TO SYSTEMS DEVELOPMENT

(First paper)

NQF LEVEL 2

25 November 2024

This marking guideline consists of 7 pages.

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SECTION A

QUESTION 1

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

(10 × 1) **[10]**

QUESTION 2

2.1 False
2.2 True
2.3 True
2.4 True
2.5 False

(5 × 1) **[5]**

QUESTION 3

3.1 Debugging
3.2 Dim
3.3 1
3.4 CPU
3.5 8

(5 × 1) **[5]**

TOTAL SECTION A: 20

SECTION B

QUESTION 4

4.1 4.1.1 Hardware refers to the physical components of a computing device,✓ including the processor, memory, storage devices that enable the user to perform major functions such as input, output, storage and more.✓
Software refers to the tasks that a computing device can perform and how users interact with it,✓ thus, software refers to computer instructions that allow the user to perform specific tasks.✓
(Any relevant variant of the above) (Any 2 × 2) (4)

4.1.2
- Application software
- System software
- Middleware
- Programming Software
- Driver Software
- Freeware
- Shareware
- Opensource software
- Propriety software (Any relevant answer) (5 × 1) (5)

4.1.3 A peripheral device is an external device connected to a computer✓ that provides additional functionality beyond the core components of a computer system.✓ (2)

4.2
- Process management
- Device management
- Memory management
- Security and access control
- User interface management
- File system management (6 × 1) (6)

[17]

QUESTION 5

5.1 5.1.1 2nd Generation languages (2GL), or assembly languages, offer low-level control and are tied closely to hardware, requiring detailed knowledge of the system architecture. ✓ They are efficient but difficult to write and maintain, and are typically used in systems where performance and hardware control are critical. ✓

3rd Generation languages (3GL) are high-level languages that abstract away most hardware details, making them easier to use, more portable, and faster to develop with. ✓ They are widely used for general-purpose programming and application development✓
(Any relevant variant of the above) (2 × 2) (4)

5.1.2
- Java
- Python
- C#
- C++
- PHP
- JavaScript (Any relevant answer) (Any 4 × 1) (4)

5.2 5.2.1
- Consistency
- Flexibility
- Saves time
- Easy to maintain
- Code already tested
- Reduces redundancy
- Reliability

(Any relevant answer) (Any 2 × 1) (2)

5.2.2 (a) Event-driven programming/Electronic data processing
(b) Rapid application development

(2 × 2) (4)

5.2.3
- Classes are blueprints or templates for creating objects✓ and define the properties and methods that objects of the class will have.✓
- Objects are instances of classes✓ and each object has its own unique state and behaviour, which are defined by the class.✓

(2 × 2) (4)

5.3 5.3.1 Problem definition – To clearly understand and define the problem that the program needs to solve. This phase involves gathering requirements from stakeholders to understand what the program should achieve.✓✓

5.3.2 Design – the design phase follows the planning phase and the primary goal of this phase is to convert the requirements acquired during the planning phase into a detailed technical blueprint and to design the user interface.✓✓

5.3.3 Construction – the coding phase is where the actual code for the project is written based on the requirements and design specifications defined in the earlier phases.✓✓

(3 × 2) (6)
[24]

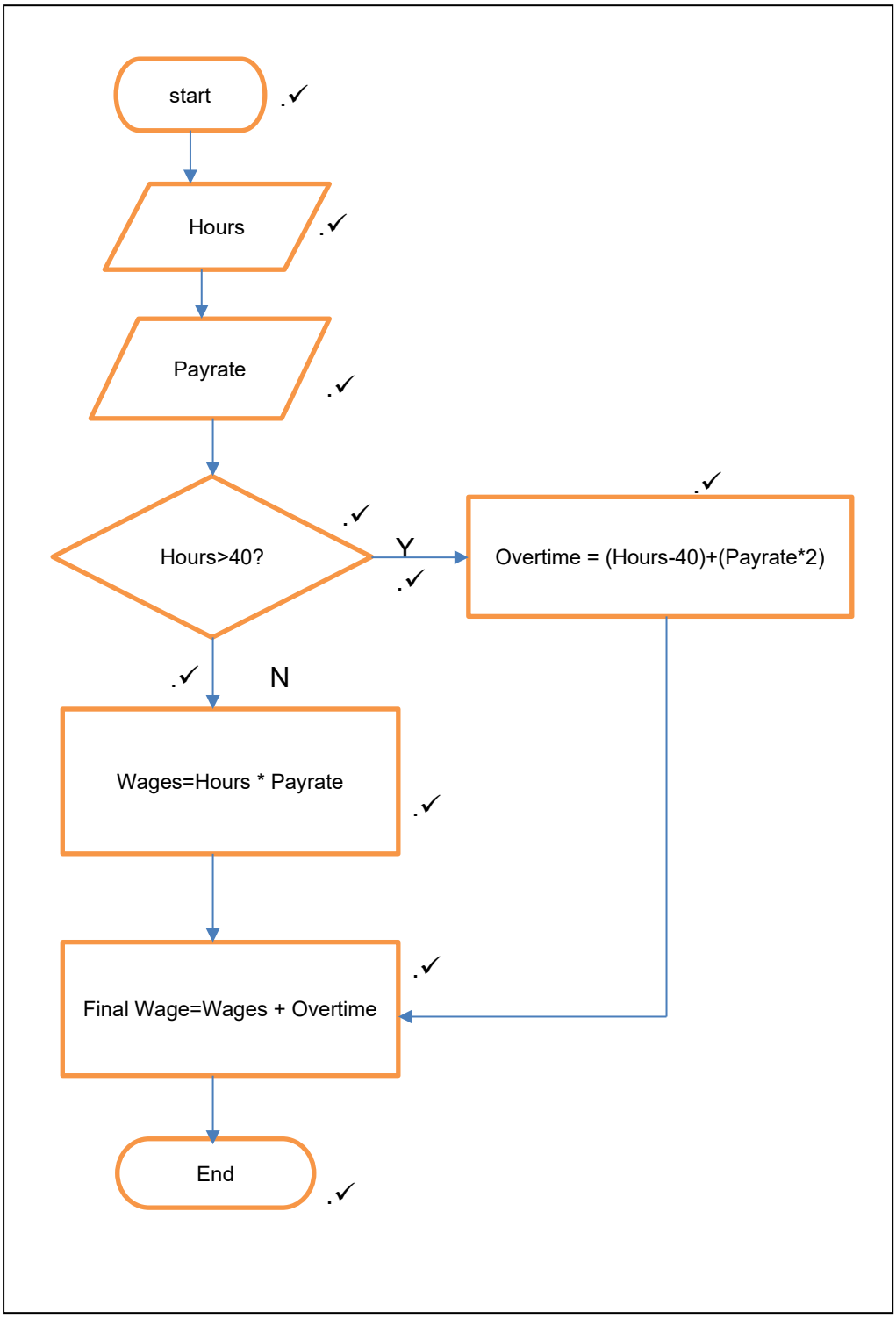
QUESTION 6

6.1 Data type determines the amount of memory allocated to store a particular piece of data✓ and defines the format in which data is stored and interpreted by the computer.✓ (2)

6.2
- Divide & Conquer
- Dynamic Programming
- Greedy Approach
- Simple Recursive
- Backtracking
- Branch & Bound
- Brute Force
- Randomised

(Any 5 × 1) (5)

6.3



(Markers to use own discretion) (10)

6.4
- Primary storage
- Secondary storage
- Off-line storage
- Online storage
- Tertiary storage
- Direct Attached Storage (DAS)
- Network Attached Storage (NAS)
- SSD Flash Drive Arrays.
- Hybrid Flash Arrays.
- Hybrid Cloud Storage.
- Backup Software.
- Backup Appliances.
- Cloud Storage (Any 6 × 1) (6)

6.5
- Mode
- Median
- Mean
- Percentiles
- Range
- Standard Deviation
- Variance (Any 2 × 1)

(2)
[25]

QUESTION 7

7.1 7.1.1 Software verification is the process of ensuring that a project meets specified requirements✓ and achieves the intended purpose accurately and reliably.✓

7.1.2 Software validation is the process of evaluating the project✓ during or at the end of the development process to determine whether it meets specified requirements and fulfils its intended purpose within its intended environment.✓

(2 × 2) (4)

7.2
- Design documentation
- User manual
- Maintenance documentation
- Installation guide
- Architecture documentation
- Marketing documentation
- Internal documentation
- External documentation (Any 3 × 1) (3)

7.3
- Early detection of bugs & defects
- Ensures products meet requirements
- Improves user satisfaction
- Reduces development costs
- Ensures Software Security
- Enhances Software Reliability and Stability
- Promotes Efficient Development Processes
- Facilitates Compliance with Standards and Regulations
- Improves Product Performance
- Reduces Maintenance Costs
- Supports Agile and Continuous Integration/Delivery (CI/CD)
- Builds a Better Reputation for the Development Team or Company
- Encourages Continuous Improvement
- Supports Better Collaboration and Communication

(Any 3 × 1) (3)

7.4 Unit/component testing; Integration testing; System testing ; Acceptance testing (4)

[14]

TOTAL SECTION B: 80
GRAND TOTAL: 100

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