higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

SYSTEM ANALYSIS AND DESIGN
NQF LEVEL 3

13 November 2024

This marking guideline consists of 12 pages.

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SECTION A

QUESTION 1

1.1	1.1.1	C		
	1.1.2	D		
	1.1.3	A		
	1.1.4	A		
	1.1.5	B		
	1.1.6	A		
	1.1.7	D		
	1.1.8	C		
	1.1.9	A		
	1.1.10	B		
			(10 × 1)	(10)
1.2	1.2.1	True		
	1.2.2	False		
	1.2.3	True		
	1.2.4	True		
	1.2.5	False		
	1.2.6	False		
	1.2.7	True		
	1.2.8	False		
	1.2.9	True		
	1.2.10	True		
			(10 × 1)	(10)
1.3	1.3.1	Database Management System		
	1.3.2	Information Communication and Technology		
	1.3.3	Chief Knowledge Officer		
	1.3.4	Work Breakdown Structure		
	1.3.5	Critical Path Method		
	1.3.6	Return on Investment		
	1.3.7	User Experience		
	1.3.8	Decision Support System		
	1.3.9	Material Resource/Requirements Planning		
	1.3.10	Uninterruptable Power Supply		
			(10 × 1)	(10)

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1.4	1.4.1	E
	1.4.2	F
	1.4.3	A
	1.4.4	B
	1.4.5	G
	1.4.6	L
	1.4.7	C
	1.4.8	I
	1.4.9	N
	1.4.10	K

(10 × 1) (10)
[40]

TOTAL SECTION A: 40

SECTION B

QUESTION 2

2.1 2.1.1 Encryption is a way to scramble data so that only authorised parties can unscramble it. (2)

2.1.2
- The purpose of encryption is to secure and protect sensitive information by converting it into an unreadable format known as ciphertext.
- Encryption ensures the confidentiality, integrity, and authenticity of data, particularly when it is transmitted or stored in insecure environments such as over the internet or on portable devices.

(2 × 2) (4)

2.1.3

H	**E**	**L**	**L**	**O**

(2)

2.2 2.2.1
- In a centralised system, all users are connected to a central server that stores complete network data and user information,✓ whereas a decentralised system has several peer-to-peer user groups and each group has its own separate server that stores data and information relevant to only that group.✓
- In a centralised information system, all data processing and decision-making activities are controlled and managed from a single location typically at headquarters or a main office,✓ whereas a decentralised information system distributes data processing and decision-making responsibilities across multiple locations or departments, allowing for greater autonomy and flexibility in operations.✓

(2 × 2) (4)

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2.2.2
- Centralised control over and management of its data, applications, and resources.
- It usually reduces an organisation's hardware expenses.
- It can reduce purchasing expenses.
- It's usually easier to meet specific industry regulations.
- It can improve IT staff productivity.
- It usually makes sharing information throughout an organisation easier.
- Streamlines communication and collaboration. (Any 3 × 1) (3)

[15]

QUESTION 3

3.1 A system analyst is a professional responsible for analysing, designing, and implementing information systems to help organizations operate more efficiently and effectively. (2)

3.2
- Ability to listen and learn quickly.
- Ability to ask the right questions.
- Ability to contribute to team effort.
- Interpersonal skills.
- Client-handling skills.
- Negotiation skills.
- Problem solving skills.
- Technical skills.
- Presentation skills.
- Communication skills.
- Attention to detail. (Any 2 × 1) (2)

3.3 3.3.1 Phased-development methodology. (2)

3.3.2
- The project progresses through a series of sequential phases. Each phase builds upon the work completed in the previous phase.
- Phased methodologies often involve incremental development, meaning that a project is built and delivered in increments or iterations or versions. (2 × 2) (4)

3.3.3 Structured approach. (1)

3.3.4 The project progresses through a series of sequential phases and each phase builds upon the work completed in the previous phase. (2)

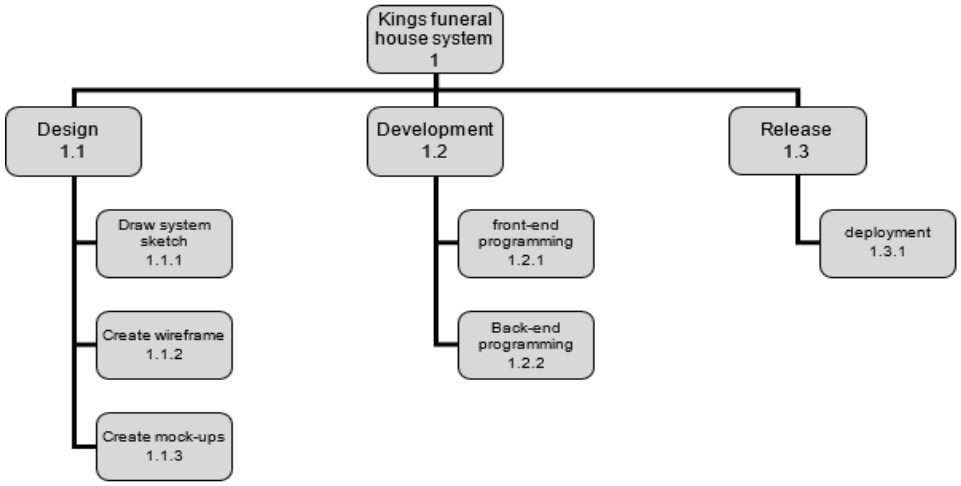
3.4
- Time
- Cost
- Scope (3)

3.5 Triple constraint/Iron Triangle. (2)

3.6 An Entity Relationship Diagram (ERD). (2)

3.7 3.7.1 The purpose of WBS is to divide a project into manageable sections that can be more easily planned for and managed. Each section is divided again and again into smaller and smaller subsections until they are small enough to be assigned to an individual to compete. (2)

3.7.2



Mark allocation:
- 2 Marks for main process
- 2 Marks for first-level sub processess
- 2 Marks for second-level sub processes
- 1 Mark for correct numbering
- 1 Mark for logic

(8)
[30]

QUESTION 4

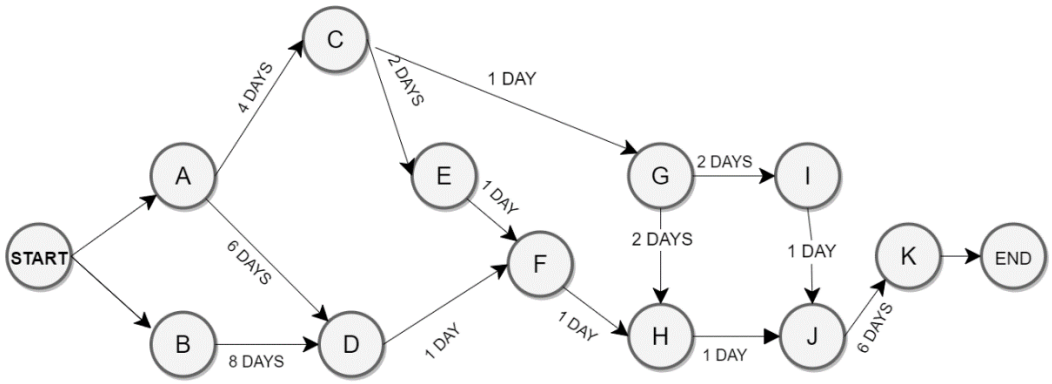
4.1

Activity	ES	EF	LS	LF
A	0	4	0	4
B	0	2	0	2
C	4	10	4	10
D	10	15	10	15
E	10	16	10	16
F	16	18	16	18
G	10	16	10	16
H	18	26	18	26
I	18	25	18	25
J	26	32	26	32
K	32	39	32	39
	✓	✓	✓	✓

(4)

4.2 A critical path is the longest sequence of dependent activities that determines the minimum duration required to complete a project. (2)

4.3

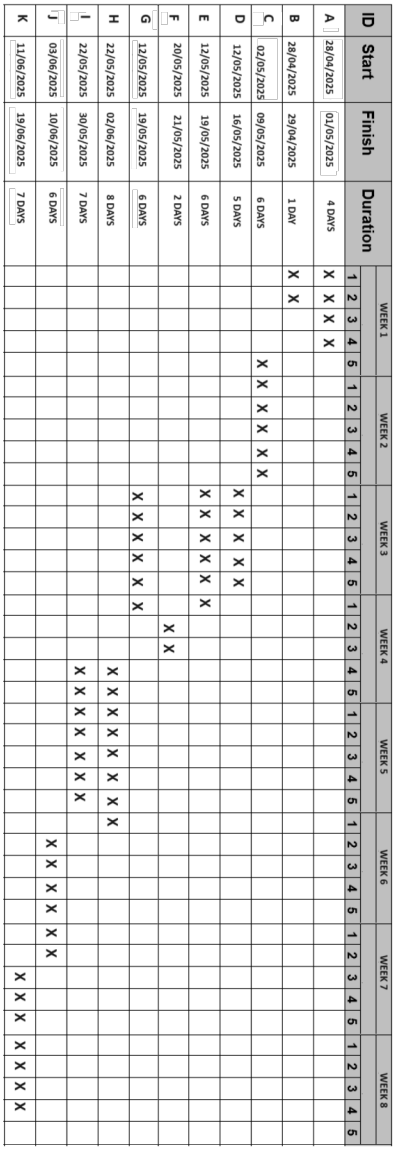


Mark allocation

1 Mark for indicating the activities with arrows	1
1 Mark for indicating start and end nodes	1
1 Mark for indicating all milestone nodes	1
7 Marks for correct order and diagram	7

(10)

4.4



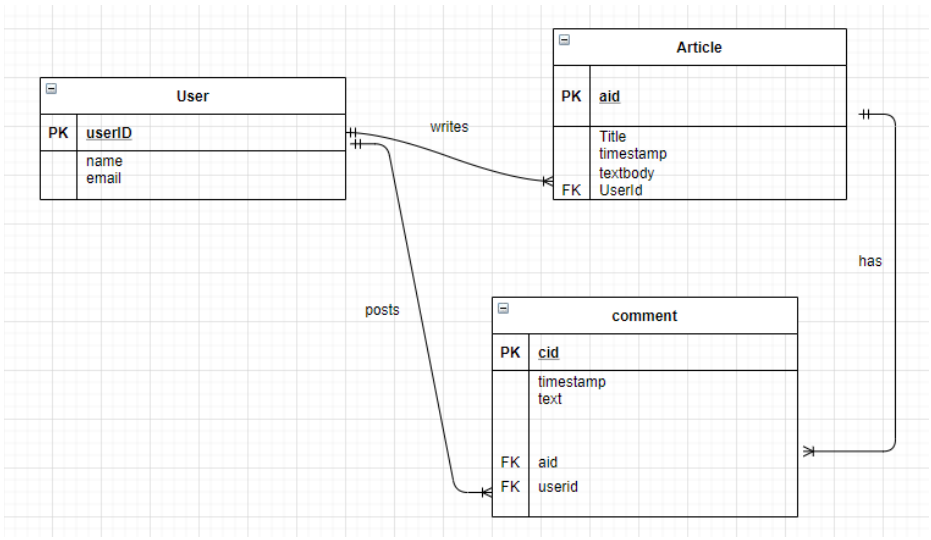
Mark allocation:
1 Mark for every correct row of activities (B – K). (10)

4.5 4.5.1 A − R280 000
B − R0
C − R120 000
D − R140 000
E − R80 000
F − R360 000 (6)

4.5.2 System development lasted for a year.
No system was developed in year 2. (2)

4.6 4.6.1 Entity Relationship diagram. (2)

4.6.2



Mark allocation:
- 1 Mark for all three entities
- 1 Mark for all non-key attributes for all entities
- 3 Marks for primary keys
- 1 Mark for all relationships
- 1 Mark for all cardinalities
- 3 Marks for foreign keys (10)

4.6.3 Modelling is the process of developing abstract models of a system. Each model presents a different view or perspective of that system. It is about representing a system using some kind of graphical notation. (2)

4.6.4
- To create focus and attention to detail.
- So that we learn about the system problems from models.
- To document all the requirements coherently.
- To provide visual communication.
- To plan, monitor and control projects.
- To provide detailed documentation for the maintenance and support of the information system. (Any 2 × 2) (4)

[52]

QUESTION 5

5.1 5.1.1

- Used to map out the flow of information for any process or system.
- To document a process for better understanding, quality control and for the training of employees.
- To standardise a process for optimal efficiency and repeatability.
- To study a process for efficiency and improvement. (Any 2 × 1) (2)

5.1.2

- Entity
- Process
- Data store
- Data flow (4)

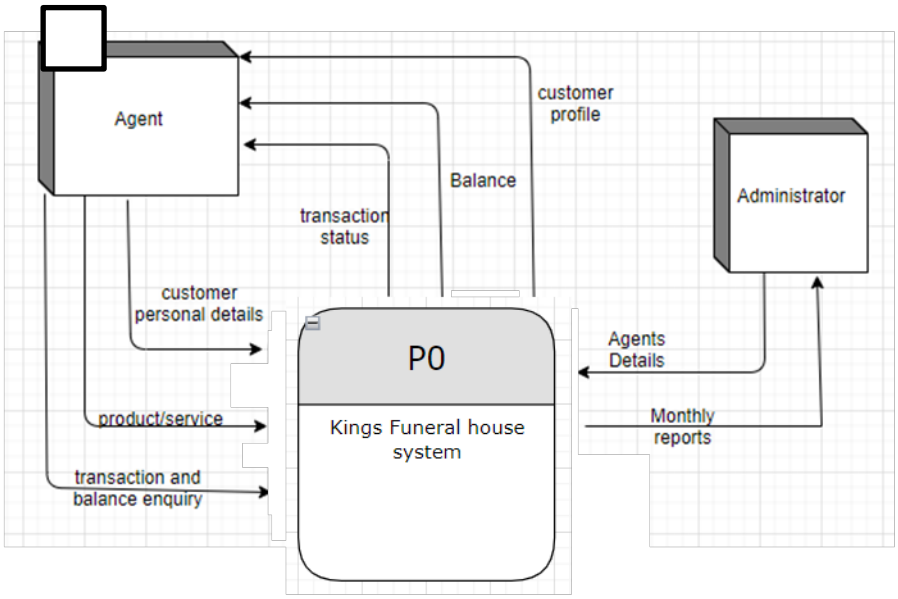
5.1.3



✓ ✓ ✓ ✓

NOTE: Accept both Gane & Sarson and Yourdon & Coard notations. (4)

5.1.4



Mark allocation:

- 2 Marks for main process
- 2 Marks for both entities
- 8 Marks for all data flows ÷ 2 (8)

5.2 5.2.1 A structure chart represents the breakdown of the system to its lowest, manageable levels. (2)

5.2.2 

(1)

5.2.3 A control parameter indicates that a criterion has been met and gives confirmation to the system to proceed. (2)
[23]

QUESTION 6

6.1 6.1.1 A − Recycle Bin
B − Shopping Trolley or Cart
C − Paste (3)

6.1.2
- Recycle Bin contains all deleted files, folders, and so on until they are finally removed from the hard disk.
- The Paste button inserts text currently on the clipboard into the text area at the location of the cursor.
- Shopping Trolley or Cart allows customers to add products to their online shopping cart by clicking on them. (3 × 2) (6)

6.2 6.2.1 User interface is a system that controls the way information is shown to a computer user and the way the user is able to work with the computer. (2)

6.2.2 A − Text box
B − Date and time picker
C − Dropdown list/Combo box
D − Button (4)

6.2.3
- Text Box is used to display and accept the text from the user as an input or a single line of text on a VB.NET Windows form at runtime.
- Date and time picker allows the user to select or display date and time values with a specified format in Windows Forms.
- Dropdown list is used like a list box but the user can select only one of the options provided.
- Buttons are used to perform a particular action such as submitting data entered into other actions. (4)

6.2.4
- Clarity: Design elements should not only be clear and understandable, but also ensure that users can easily interpret information and interact with the interface without confusion.
- Consistency: Consistent design patterns and conventions across the interface ensures predictability, which helps users to navigate and understand the system.
- Efficiency: Interfaces should facilitate efficient task completion by minimising the number of steps and interactions required to achieve user goals.
- Forgiveness: Interfaces should be forgiving of user errors, provide clear feedback and allow users to recover easily from mistakes.
- Familiarity: Leveraging familiar design patterns and elements helps users quickly understand how to interact with the interface based on their existing knowledge and experiences.
- Responsiveness: Interfaces should be responsive and adaptable to different devices, screen sizes, and input methods by offering a consistent user experience across platforms.
- Accessibility: Interfaces should be accessible to users of all abilities, ensuring that everyone can interact with the system regardless of physical or cognitive limitations.
- Visual hierarchy: Design elements should be organised in a clear visual hierarchy with important information and actions emphasised to guide users' attention.
- Feedback: Providing timely and informative feedback to user actions not only helps users understand the system's response, but also confirms that their interactions have been successfully processed.
- Simplicity: Keep interfaces simple and focused by avoiding unnecessary clutter and complexity that can overwhelm users and detract from the overall user experience. (Any 2 × 2) (4)

6.3 6.3.1 Outsourcing is the use of a third party to acquire services for an organisation in an important but is not core business area.✓✓ Offshoring is a type of outsourcing that involves the use of an international third party to take advantage of lower costs elsewhere.✓✓ (2 × 2) (4)

6.3.2
- Define requirements.
- Research the available technology.
- Issue a request for proposal.
- Compare available technology.
- Decide on the best option.
- Implement the information system technology. (6)

6.4 6.4.1 A − Barcode scanner
B − Speakers
C − Microphone (3)

6.4.2
- Use check digits.
- Use input masks.
- Use limit controls.
- Use field types that allow a user to choose from a list.
- Set up checks between different fields.
- Use networks to build security via protocol for data transmission.
- Use completeness checks.
- Ensure that only authorised people have access to the system.
- Any relevant answer. (Any 2 × 2) (4)

[40]

TOTAL SECTION B: 160
GRAND TOTAL: 200

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