higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

SYSTEM ANALYSIS AND DESIGN
NQF LEVEL 3

8 November 2022

This marking guideline consists of 11 pages.

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SECTION A

QUESTION 1

1.1	1.1.1	A		
	1.1.2	B		
	1.1.3	B		
	1.1.4	C		
	1.1.5	B		
	1.1.6	A		
	1.1.7	B		
	1.1.8	A		
	1.1.9	C		
	1.1.10	D		
			(10 × 1)	(10)
1.2	1.2.1	True		
	1.2.2	False		
	1.2.3	False		
	1.2.4	False		
	1.2.5	True		
	1.2.6	True		
	1.2.7	True		
	1.2.8	True		
	1.2.9	True		
	1.2.10	True		
			(10 × 1)	(10)
1.3	1.3.1	Accounting information system		
	1.3.2	Chief knowledge officer		
	1.3.3	Data flow diagram		
	1.3.4	Critical path method		
	1.3.5	System analyst/system analysis		
	1.3.6	Service Level Agreement		
	1.3.7	Graphical user interface		
	1.3.8	Enterprise resource planning		
	1.3.9	Executive Information System		
	1.3.10	Decision support system		
			(10 × 1)	(10)

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1.4	1.4.1	Data
	1.4.2	Centralisation
	1.4.3	Gantt chart
	1.4.4	Intangible benefits
	1.4.5	Offshoring
	1.4.6	Network diagram
	1.4.7	Multiple predecessor
	1.4.8	Process decomposition diagram
	1.4.9	Scope creep
	1.4.10	Request for information

(10 × 1) (10)
[40]

TOTAL SECTION A: 40

SECTION B

QUESTION 2

2.1 2.1.1 Data processing is the collection and manipulation of items of data✓ to produce meaningful information. ✓

2.1.2 Enterprise computing is a complete computing platform✓ to be used across the organisation by different departments. ✓

(2 × 2) (4)

2.2
- Data transformation
- Data consolidation
- Data derivation
- Data visualisation
- Organising
- Verification
- Analysing
- Manipulation

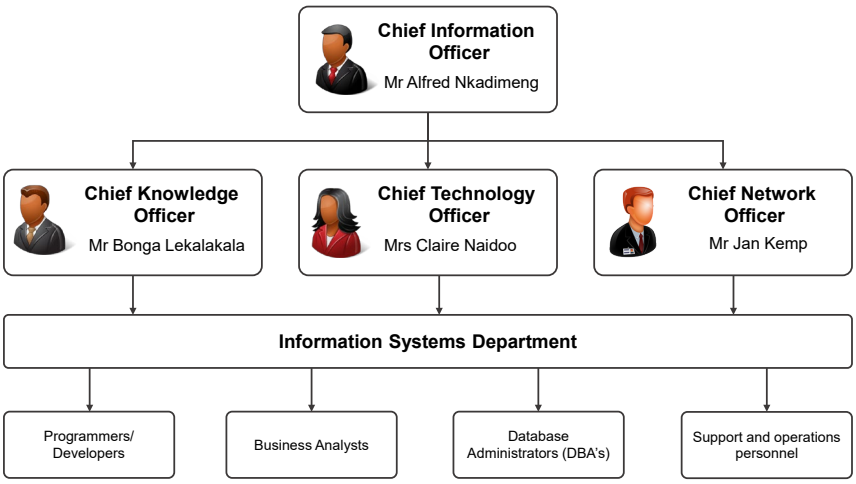
(Any 2 × 1) (2)

2.3
- Accuracy
- Reduced costs
- Timesaving
- Easy data exchange
- Central data storage
- Improved communication

(Any 2 × 1) (2)
[8]

QUESTION 3

3.1 **Progressive Logistics Organisational Chart**



Mark allocation

- 1 Mark for the diagram title
- 1 Mark for indicating the CIO as the top node
- 3 Marks for indicating the next level (showing the CKO, CTO and CNO)
- 1 Mark indicating the IS department as a whole
- 1 Mark for indicating the various other teams that make up the IS department (7)

3.2 3.2.1 The programmer develops systems by writing computer instructions called the programming code.

Or

A programmer is an individual that writes/creates computer software or applications by giving the computer specific programming instructions. (2 × 1)
(Source: https://www.techopedia.com/definition/4813/programmer) (2)

3.2.2 A person responsible for the design and management of an organization's databases✓ as well as the evaluation, selection and implementation of the database management system (DBMS) software. ✓

Or

Database administrator (DBA) is the information technician✓ responsible for directing or performing all activities related to maintaining a successful database environment. ✓
(Source: https://www.techtarget.com/searchdatamanagement/definition/database-administrator)

(2 × 1) (2)
[11]

QUESTION 4

4.1 4.1.1

- Ability to listen and learn quickly
- Ability to ask the right questions
- Ability to contribute to a team effort
- Good negotiation skills
- Good interpersonal skills
- Logical problem-solving skills
- Ability to manage expectations and explain technical details
- Ability to document requirements (Any 5 × 1) (5)

4.1.2 The system analyst is a person who is thoroughly aware of the system and guides the system development project✓ by giving proper directions.
He is an expert having technical and interpersonal skills to carry out development tasks required at each phase. ✓

(2)

4.2

- Technological problems
- Lack of expertise
- Lack of understanding of the problem, opportunity, or directive
- Incomplete specification of requirements and functionality
- Changing requirements
- Lack of management support for the project
- Lack of control or planning
- Lack of user involvement (Any 2 × 1) (2)

4.3

- Preliminary investigation✓ – The purpose of the phase is to identify the business' need for the system and to determine what value the system will add to the business.✓
- Analysis and requirements specification✓ – Necessary to find out what the system must do, analyse the business problem and determine what requirements must be met by the system.✓
- Design and requirements specification✓ – Determine how a system can be implemented that can do what was specified in the previous stage.✓
- Construction and implementation✓ – An information system is built, tested and implemented.✓
- Maintenance and support✓ – The focus is on the changes that need to be made to the information system once it is implemented and in use of the organisation.✓ (5 × 2) (10)

[19]

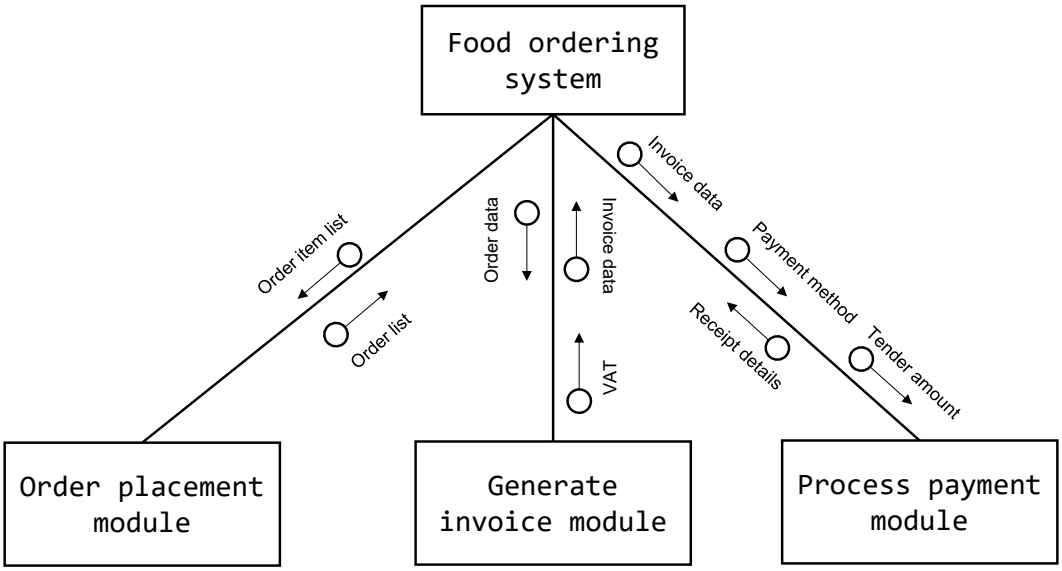
QUESTION 5

5.1

1. Scanning the environment. (Determine the strategic position / Prioritize the objectives)
2. Strategy Formulation.
3. Strategy Implementation.
4. Strategy Evaluation.

(4 × 1) (4)

5.2

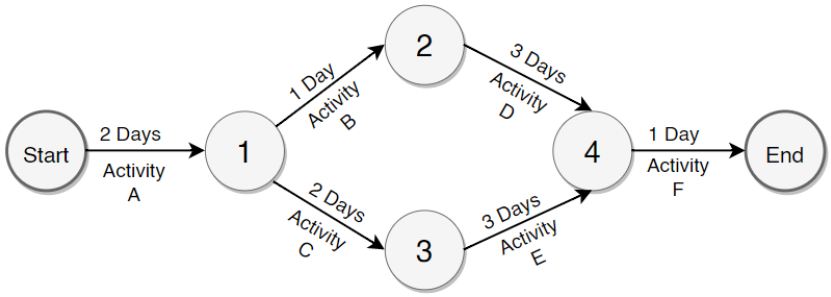


Mark allocation

- 1 mark for the main module (1 × 1)
- 3 marks for each submodule (3 × 1)
- 1 Mark for each data movement indication grouped corectly to each sub module, the direction flow indication and a descrption (9 × 1) (13)

5.3 5.3.1 Project evaluation and review technique (1)

5.3.2 (10)



Mark allocation

1 Mark for indicating the activities using arrows
1 Mark for indicating the activity symbol
1 Mark for indicating a start and end node
1 Mark for indicating the other nodes (milestones) as circles

6 Marks for the correct order and correct diagram composition. (Subtract 1 mark for each error) i.e., 6 marks should be allocated if the shape of the PERT and the activities are the same as indicated.

5.4 5.4.1 These are tasks that must be completed in a specific order, one after the other. (1)

5.4.2 Different tasks can be worked on at the same time. (1)

[30]

QUESTION 6

6.1 The purpose of this assessment is to find the most practical, logical and potentially most successful solution. (2)

6.2
- Economic: Looks at whether the system should be built form a financial or economic point of view.
- Technical: Looks at whether the development team will be able to complete the project successfully.
- Operational: Looks at the proposal in terms of how well it will fit in and work with the organisation and how it operates.
- Schedule: The overall schedule of the project should be considered and whether it is realistic.
- Legal: Establishes if the system will comply with local and international laws as well as organisational requirements particularly with regard to security.
- Organisational: Establishes if the system would be disruptive to the organisation when too much change takes place at once. (Any 3 × 2) (6)

6.3 6.3.1 To compare the adjusted present value of all costs✓ versus the benefits and use a rate of discount to adjust amounts to the value at the present point in time✓ (2)

6.3.2 To calculate the time, it takes to pay back costs invested in a project (1)

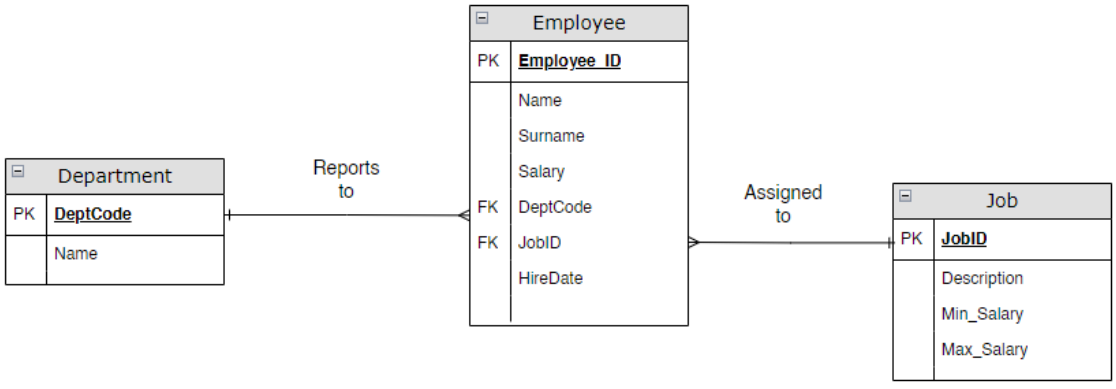
6.3.3 To examine the financial risks associated with the project (1)

6.4
- Statement of the problem to be solved.
- Description of future state.
- Explanation of how the solution will contribute to the future state.
- Statement of who will be impacted by the solution.
- Statement about how the solution will be used. (Any 4 × 1) (4)

[16]

QUESTION 7

7.1



(15)

Mark allocation

- 3 marks for entities
- 3 marks for primary keys
- 2 marks for foreign keys
- 3 marks for non-key attributes
- 2 marks for relationships
- 2 marks for cardinalities

7.2 7.2.1 A primary key attribute is a field that uniquely identifies a record in a database.

7.2.2 A non-key attribute is a field that cannot be used to identify the entity but indicates additional characteristic details of the entity.

(2 × 2) (4)

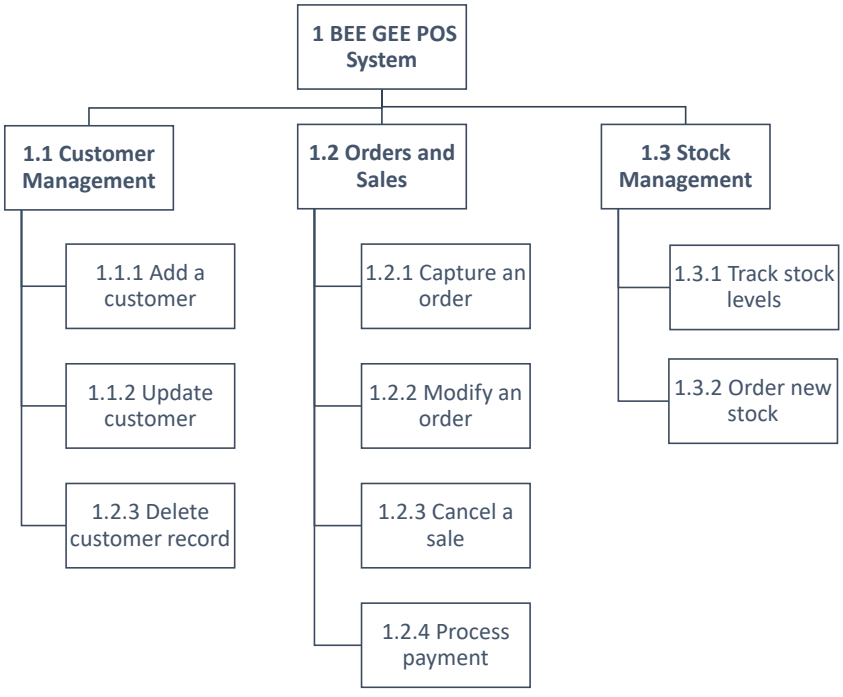
7.3

- External events✓ occur externally to the system but in the system environment and are usually initiated by an actor.✓
- Temporal events✓ occur internally to the system and are triggered by time.✓
- State events✓ occur internally to the system and are triggered by changes in the state due to another event.✓ (3 × 2) (6)

[25]

QUESTION 8

8.1



Mark allocation

- 1 mark for system name
- 3 marks for level 2 activites
- 9 marks for level 3 activities
- 1 mark for the composition (14)

8.2 8.2.1



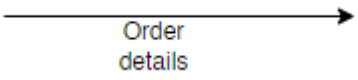
Or Kitchen
Or Bank

8.2.2



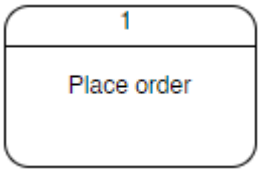
Or Sales

8.2.3



Any flow from the diagram

8.2.4



Or Generate Invoice
Or Process Payment

TAKE NOTE:

A mark should only be allocated if the symbol drawn is from the diagram. Any correct element should be allocated a mark.

(4 × 1) (4)

8.3 8.3.1 DFD Level 1 diagram (1)

8.3.2 Any TWO of
The diagram indicates datastores and
There are more than 1 process
The numbering of the processes are main level numbers and not sub level (e.g., 1.1 etc)

(2 × 1) (2)

[21]

QUESTION 9

9.1 The elements that a user will interact with a system using an input device.

Or

User interface (UI) is any method or means by which the end-user of a product interacts with, or controls, a product, software or hardware device. (2)

9.2 Interface A (1)

9.3 The error message does not provide the user with sufficient information regarding the error. (2)

9.4
- Simplicity: Do not make things complicated for the user. Make sure the form is not too clustered.
- Consistency and familiarity: Use a layout that is familiar to the user.
- Ease of navigation: Navigation between screens or records in an application should be easy to see and clearly marked.
- Recognisable controls: Use familiar controls such as buttons or text boxes that the user recognises.
- Grouping of components: Place controls that logically belong together in groups on the form.
- Prevention of errors: Design an interface that aim to prevent unnecessary mistakes by the user.
- Feedback to the user: The interface should give feedback or error messages to the user.
- Include help function: All programs should include a help function as part of the interface. (Any 5 × 2) (10)

[15]

QUESTION 10

10.1 10.1.1 Computer ergonomics is the study of how we interact with our computers. ✓✓

OR

Scientists that study computer ergonomics, attempt to find solutions to limit injuries and potential long term health risks such as strain, fatigue, and injuries✓ caused by poor product design or workplace arrangement. ✓ (2)

10.1.2 Image A (1)

10.1.3
- The chair supports the user's back to a straight sitting position.
- The height of the table allows the user to use the computer without bending her back. (2)

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10.1.4
- Power availability
- Level of security
- Physical space
- Network connectivity (Any relevant 4 × 1) (4)

10.2 Open ended answer. (1)

Answers such as:
- Limits the need for the user to move his/her wrist
- Palm is placed flat on the surface

Any acceptable other answer

10.3 10.3.1
- Renting
- Leasing
- Purchasing (3 × 1) (3)

10.3.2
- May include ongoing license fees
- Source code will never be owned
- Code cannot be changed/modified
- May not be an exact business fit (Any 2 × 1) (2)

[15]

TOTAL SECTION B: 160
GRAND TOTAL: 200