higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

SYSTEM ANALYSIS AND DESIGN
NQF LEVEL 3

(10041003)

3 March 2020 (X-paper)
09:00–12:00

This question paper consists of 10 pages.

245Q1S2003

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TIME: 3 HOURS
MARKS: 200

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 a black pen.
6. Write neatly and legibly.

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SECTION A

QUESTION 1

1.1 Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

1.1.1 Management information systems (MIS) …

A create and share documents that support day-today office activities.
B process business transactions.
C capture and reproduce the knowledge of an expert problem.
D solver-use the transaction data to produce information needed by managers to run the business.

1.1.2 What category of information system determines the sale of an item and a withdrawal from an ATM?

A Management Information System
B Executive Information System
C Decision Support System
D Transaction Processing System

1.1.3 A data store is represented in a data flow diagram as a …

A square.
B ellipse.
C open rectangle.
D circle.

1.1.4 In which phase of the SDLC is the system proposal developed?

A Analysis
B Design
C Implementation
D Planning

1.1.5 The primary advantage of the waterfall development methodology:

A Version of the system is quickly delivered into the users' hands.
B Requirements evolve through users' feedback about the system.
C There is a long time-lapse prior to completion.
D Requirements are completely specified and held relatively constant prior to programming.

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1.1.6 … is the process of examining the technical, economic, and organisational pros and cons of developing a new system.

S

A Feasibility analysis
B Functionality determination
C Risk analysis
D System request

1.1.7 RAD stands for …

A Raid application design
B Research application development
C Rapid application development
D Research aid design

1.1.8 The main issue in documentation during the … phase is to determine what the system must do.

A analysis
B maintenance
C coding
D implementation

1.1.9 An organisation chart is a type of … chart.

A basic
B IPO
C hierarchical
D step

1.1.10 A graphic representation of an information system is called a …

A flow chart.
B pictogram.
C data flow diagram.
D histogram.

(10 × 1) (10)

1.2 Choose an item from COLUMN B that matches a description in COLUMN A. Write only the letter (A–O) next to the question number (1.2.1–1.2.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
1.2.1	Planned undertaking that has a beginning and an end, and that produces some definite result.	A	computer application
1.2.2	Information systems development process that emphasises flexibility	B	system design
1.2.3	Identifiable and partitioned portion of overall system	C	information system
1.2.4	Approach to system development in which system is grown bit by bit	D	project
1.2.5	Computer software program that executing on computing device to carry out specific function or set of related functions	E	information system development process
1.2.6	Set of interrelated computer components that collects, processes, stores and provides as output information needed to complete tasks	F	subsystem
1.2.7	Activities enabling person to understand and specify accomplishments of new system	G	Operating system
1.2.8	Entire process consisting of activities to build, launch and maintain information system	H	iterative development
1.2.9	Approach used to develop particular information system	I	dog
1.2.10	Activities enabling person to define and describe in detail system that solve need	J	systems analysis
		K	agile development
		L	RAD
		M	cat
		N	JAD
		O	system development life cycle

(10 × 1) (10)

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1.3 Write down the following abbreviations in full:

1.3.1 TOC

1.3.2 BPA

1.3.3 AIS

1.3.4 BPR

1.3.5 ERD

1.3.6 SME

1.3.7 JAD

1.3.8 GSM

1.3.9 SWOT

1.3.10 BPI

(10 × 1) (10)

1.4 Choose the correct term from those in brackets. Write only the answer next to the question number (1.4.1–1.4.10) in the ANSWER BOOK.

1.4.1 Organisational planning that allows long-term and high-level schedules and budget is known as (operational planning/tactical planning).

1.4.2 (Renting/Outsourcing) contracts are carefully designed to ensure that an organisation receives exactly what it needs in terms of information systems.

1.4.3 An organisation may use (innovation strategy/business espionage) as a competitive strategy.

1.4.4 (Investment/Organisational transformation) uses specific training and migration plans for the end users.

1.4.5 (Activating elimination/Outcomes analysis) forces the organisation to examine everything it does and to think about how the process could operate without the task.

1.4.6 The (chief financial officer/chief information officer) does not focus on the day-to-day issues of the information systems department.

1.4.7 (Defensive/Cost justified) information systems are tightly controlled with all investment done strictly based return of investment.

1.4.8 (Differentiation strategy/Growth strategy) involves special focus on certain market segments.

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1.4.9 A (cash cow/problem child) is a product in a high-growth market, but has a low market share.

1.4.10 (Management systems/Operational systems) are systems dealing with the planning and decision-making side of the business.

(10 × 1) (10)
[40]

TOTAL SECTION A: 40

SECTION B

QUESTION 2

2.1 What is a system? (2)

2.2 What are the FOUR main conditions that must be satisfied to consider an information systems development project a success? (4)

2.3 Discuss TWO advantages and TWO disadvantages each of the following system development life-cycle approaches:

2.3.1 Parallel development approach

2.3.2 Waterfall approach

(2 × 4) (8)

2.4 Explain why managers need information systems. (2)
[16]

QUESTION 3

3.1 Briefly explain *accounting system.* (2)

3.2 Explain the purpose of an operational support system. (3)

3.3 List and explain THREE different categories of automation systems. (6)

3.4 Differentiate between an *accounting information system* and a *total information system.* (6)
[17]

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QUESTION 4

The role of an IT department within an organisation is to design, maintain and support the information technology infrastructure, thus allowing the organisation leverage on both information and technology in an efficient, productive and secure manner.

[Source: *https://www.business-achievers.com*]

4.1 Explain *information systems outsourcing.* (2)

4.2 Draw a typical hierarchical organisational chart to illustrate the various departments that support the core business operations of an organisation. (6)

4.3 List EIGHT different careers in information systems and explain their roles in an organisation. (8 × 2) (16)

4.4 Name the THREE main functions of operational management (3 × 2) (6)

[30]

QUESTION 5

5.1 Give THREE reasons why organisations acquire new computer technology. (3)

5.2 Name FIVE factors that you will consider when choosing a vendor or a supplier of computer technology. (5)

5.3 Define each of the following terms:

5.3.1 Rental

5.3.2 Lease

5.3.3 Ergonomics

(3 × 2) (6)

5.4 Redraw the table below in the ANSWER BOOK and complete it by writing down ONE advantage and ONE disadvantage of each of the methods of financing new computer technology.

FINANCE METHOD	ADVANTAGE	DISADVANTAGE
Renting		
Leasing		
Purchasing		

(6)

5.5 Briefly explain THREE advantages and THREE disadvantages of buying packaged application options. (6)

5.6 Give FOUR reasons why organisations adopt standards to guide the design of information systems and the selection of computer technology components. (4)
[30]

QUESTION 6

6.1 Define each of the following terms:

6.1.1 Organisational planning

6.1.2 Company portfolio

6.1.3 System portfolio

(3 × 2) (6)

6.2 Name THREE typical outputs produced during the tactical stage of information systems planning. (3)

6.3 What are the goals of organisational planning? (3)

6.4 Identify FOUR activities that might be performed by the project manager regarding the development of an information systems project. (4)

6.5 6.5.1. Briefly explain a *system request document.* (2)

6.5.2 Name TWO information system professionals who use the document in QUESTION 6.5.1 (2)

6.6 Use the five forces model developed by Michael Porter and list FIVE competitive forces that influence organisations' competitive environment. (5)

6.7 Name and briefly explain the THREE levels of planning in an organisation. (6)

6.8 State the role of a positional analysis in an organisation in FOUR points. (8)

6.9 Identify the factors that influence the complexity of information system planning and give a reason for each factor. (8)
[47]

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QUESTION 7

7.1 Define each of the following terms:

7.1.1 Feasibility analysis

7.1.2 Scope creep

7.1.3 Return on investment

(3 × 2) (6)

7.2 Complete the following sentence by writing only the answer next to the question number:

The areas in which project feasibility can be measured are economic, technical and … (2)

7.3 The PIECES framework provides a structured approach to examining the current system or situation in order to identify problems as well as areas of possible improvement.

State what each letter stands for by writing it down next to the letter in the ANSWER BOOK:

P =
I =
E =
C =
E =
S = (6)

7.4 Differentiate between *problem analysis* and *root-cause analysis*. (6)
[20]

SECTION B: 160
GRAND TOTAL: 200

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