higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

SYSTEMS ANALYSIS AND DESIGN
NQF LEVEL 3

(10041003)

13 November 2018 (X-Paper)
09:00–12:00

This question paper consists of 10 pages.

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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. A ruler, pencil and eraser are allowed.
5. 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 Which type of information system automates the handling of data about business activities?

A Decision support system
B Collaboration system
C Management information system
D Transaction processing system

1.1.2 Information technology blueprints or architecture consists of ...

A an investment plan.
B an applicable portfolio.
C a project evaluation.
D the type of gap that needs to be closed or crossed.

1.1.3 Organisation planning that involves long-term and high-level schedules and budgets:

A Information planning
B Operational planning
C Strategic planning
D Tactical planning

1.1.4 ... are produced to accompany summary reports and highlight areas of interest or concern for managers so that they do not have to sift through detailed reports:

A Ad-hoc reports
B Sales and performance reports
C Exception reports
D Scheduled reports

1.1.5 TWO examples of intangible benefits:

A Reduction of staff and costly information systems
B Higher employee morale and improved access to information
C A new source of revenue and increased sales
D New hardware technology and information systems

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1.1.6 An organisation may compete using ONE of the following competitive strategies:

A Cash cow
B Business espionage
C Defensive strategy
D Innovation strategy

1.1.7 When defining the planning approach, the choice of methodology often depends on ...

A the business systems planning process.
B the annual operating budgets for information systems.
C project plans and schedules for new or ongoing projects.
D the way in which technology is valued or controlled in the organisation.

1.1.8 The value of having a set of potential candidate solutions is that it can draw from ...

A different types of information and data.
B sales and marketing
C various viewpoints and ways of thinking.
D analyses and design specifications

1.1.9 ONE of the steps of the computer technology acquisition process is...

A conserving working capital.
B conducting a preliminary evaluation and short-listing vendors.
C evaluating training and installation documentation.
D performing a competitor analysis and evaluation.

1.1.10 Deliverables and documents from the design and requirements specification stage include ...

A detailed design and systems specification documents.
B training and support documentation.
C initial and support documentation.
D a systems proposal and requirements definition document.

(10 × 1) (10)

NCV

1.2 Indicate whether the following statements are TRUE or FALSE. Choose the correct answer and write only 'true' or 'false' next to the question number (1.2.1–1.2.10) in the ANSWER BOOK.

1.2.1 An information system plan should provide an analysis of current and planned business activities, needs and data requirements.

1.2.2 A systems analyst needs to be an expert in all types of technology.

1.2.3 Technology alone increases productivity and profits.

1.2.4 A shared vision of the future of a company is the key to achieving a company's strategy and ensuring its success.

1.2.5 The first four major phases of the predictive systems development life cycle (SDLC) are the planning phase, the analysis phase, the design phase, and the prototyping phase.

1.2.6 The primary objective of analysis activities is to understand the business needs and processing requirements of the new system.

1.2.7 The typical outputs for operational planning exclude resources allocation and development.

1.2.8 The support phase is the shortest and least expensive phase of the systems development life cycle (SDLC).

1.2.9 During the design phase, analysts begin to define a computer-system solution.

1.2.10 The most important activity of project planning is defining the business problem and the scope of the required solution precisely.

(10 × 1) (10)

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1.3 Choose an item from COLUMN B that matches a description in COLUMN A. Write only the letter (A–Q) next to the question number (1.3.1–1.3.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
1.3.1	A set of products, brands and services offered by a company to its clients	A	growth
		B	intangible benefits
1.3.2	An example of a competitive strategy	C	subsystem
1.3.3	Project identification takes place during this stage	D	systems portfolios
		E	purchasing
1.3.4	An examination of the costs and benefits of undertaking a project	F	physical space
1.3.5	Measurable benefits of the proposed new system that will increase the organisation's profits	G	strategic management
		H	data processing
1.3.6	Components or parts of a complete system	I	alliance
1.3.7	A systematic approach to transforming data into information	J	point of sale
		K	project feasibility
1.3.8	Using information systems and technology to support strategic planning	L	leasing
		M	operational stage
1.3.9	A system generally consists of computerised tills, which are connected to a central server in a shop	N	company portfolios
		O	tangible benefits
1.3.10	An option that is less expensive than renting	P	tactical stage
		Q	strategic system

(10 × 1) (10)

NSC

1.4 Write out the following abbreviations/acronyms in full:

1.4.1 OAS

1.4.2 BPI

1.4.3 DFD

1.4.4 DBMS

1.4.5 SMS

1.4.6 BPR

1.4.7 JAD

1.4.8 TOC

1.4.9 TPS

1.4.10 MIS

(10 × 1) (10)
[40]

TOTAL SECTION A: 40

SECTION B

QUESTION 2

Information systems development methodology defines a specific set of steps, tools, standards and requirements for completing each phase of the SDLC.

Bearing that in mind, answer the following questions:

2.1 Name and briefly explain THREE different types of systems in an organisation. (3 × 2) (6)

2.2 Name and briefly explain TWO general characteristics of a system. (2 × 2) (4)

2.3 Briefly explain FIVE factors that one would have to consider during the preliminary investigation stage of the SDLC. (5)
[15]

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QUESTION 3

3.1 Briefly differentiate between an *accounting information system* and a *total information system*. (3 × 2) (6)

3.2 Name and briefly explain THREE different categories of automation systems. (3 × 2) (6)

3.3 Name and briefly explain THREE categories of management information systems. (3 × 2) (6)

[18]

QUESTION 4

4.1 List FOUR different careers and roles that one can choose from, working in the area of information systems. (4 × 2) (8)

4.2 Identify and explain THREE aspects of strategic information systems management. (3 × 2) (6)

4.3 Explain the main focus of operational management. (6)

4.4 Differentiate between *operations support systems* and *systems support*. (4)

4.5 List FIVE tasks that are performed during information systems operations in an organisation. (5)

[29]

QUESTION 5

5.1 A Mpumalanga multinational company has appointed you to the position of a systems analyst at its head office. You are given the mandate to revamp the technology infrastructure by introducing new computer hardware and software to support the company's operations and to cater for expansion that will take place across the company.

Bearing that in mind, answer the following questions:

5.1.1 List THREE benefits of financing computer technology. (3)

5.1.2 Identify SIX steps that must be followed to acquire new technology in an organisation. (6)

5.1.3 Identify FIVE factors to be considered when implementing computer technology. (5)

5.2 Give THREE reasons that organisations acquire computer technology. (3 × 2) (6)

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5.3 Briefly explain the reasons that most organisations have adopted standards to guide the design of information systems and the selection of computer technology components. (6)
[26]

QUESTION 6

6.1 You are employed as the technical advisor of ABC Computer Technology. Your responsibility is to advise the company on the external environmental factors, including risk and threats of competitors who are offering the same business as your company.

Bearing that in mind, answer the following questions:

6.1.1 List FIVE basic competitive strategies used by competitors when competing for market share. (5 × 2) (10)

6.1.2 Name and briefly explain the FOUR important factors that an organisation needs to consider when doing organisational planning. (4 × 2) (8)

6.1.3 Explain the role of positional analysis in organisational and information systems planning. (6)

6.1.4 Identify EIGHT factors that may influence the complexity of information systems planning. (8)

6.2 Identify THREE outputs produced during the tactical planning process of information systems. (3)

6.3 Discuss why we must define the business needs of an organisation. (4)

6.4 State the elements of a SWOT analysis. (4)
[43]

QUESTION 7

7.1 Differentiate between *problem analysis* and *root cause analysis*. (7)

7.2 List FOUR different approaches that can be used to gather data. (4)

7.3 Briefly explain the term *cost–benefit analysis*. (2)

7.4 Name the SIX categories of problems according to the PIECES framework. (6)

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7.5 Study and use the table given below to calculate the return on investment.

TASK	TOTAL	YEAR 1	YEAR 2	YEAR 3	YEAR 4
Software development cost	R5 000 000	R5 000 000			
Deployment and maintenance costs	**P?**	R1 250 000	R960 000	R400 000	R305 000
TOTAL COSTS	R9 090 000	**Q?**	R960 000	R400 000	**R?**
Present value of benefits – tangible	R9 050 000	R750 000	**S?**	R2 500 000	R3 800 000
Overall profits/loss	R960 000	**T?**	R740 000	R2 100 000	R3 495 000

FIGURE 1

7.5.1 Fill in the missing amounts or values in the data table, represented by the letters P, Q, R, S and T. (5)

7.5.2 Calculate the return on investment (ROI) of this project using the data table. (5)

[29]

TOTAL SECTION B: 160
GRAND TOTAL: 200

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