



Information Systems Analysis

December 2015

Sample Exam Marking Scheme

This marking scheme has been prepared as a **guide only** to markers. This is not a set of model answers, or the exclusive answers to the questions, and there will frequently be alternative responses which will provide a valid answer. Markers are advised that, unless a question specifies that an answer be provided in a particular form, then an answer that is correct (factually or in practical terms) **must** be given the available marks.

If there is doubt as to the correctness of an answer, the relevant NCC Education materials should be the first authority.

Throughout the marking, please credit any valid alternative point.

Where markers award half marks in any part of a question, they should ensure that the total mark recorded for the question is rounded up to a whole mark.

Answer ALL questions

Marks

Question 1

- a) Identify THREE (3) aims of an information system. **3**

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *To increase the efficiency of an organization*
- *To increase the strategic activities of an organization*
- *To increase the managerial activities of an organization*
- *To increase the operational activities of an organisation*

- b) Explain briefly the purpose of constructing a data flow diagram. **4**

Award 1 mark for each bullet point up to a maximum of 4 marks:

- *To illustrate how a system works*
- *To illustrate system processes/input, output processes*
- *To illustrate how processes interact*
- *To illustrate data flows*
- *To illustrate data stores*
- *To illustrate external entities*

- c) Suggest THREE (3) reasons why a combined approach to systems analysis is undertaken for some projects. **3**

Award 1 mark for each bullet point up to a maximum of 3 marks.

- *To determine the requirements of people at an organization*
- *To determine technical functions and requirements*
- *To combine the strengths of a hard approach with the strengths of a soft approach*

Total: 10 Marks

Question 2

- a) State THREE (3) factors that should be considered when deciding whether or not to use a soft systems methodology. 3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *If the analysis is required to focus on people*
- *If the analysis is required to focus on user interaction*
- *If human activity needs to be modelled*
- *If social/political/cultural issues need to be considered*

- b) Explain how a root definition aids the analysis of an information system. 3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *It describes the aims and functions of a potential system*
- *It clarifies a system's processes*
- *It helps to clarify problems*
- *It defines what a system does/the aims of a system.*

- c) State TWO (2) diagrammatic techniques that are used in a soft approach to information systems analysis **and** briefly explain why each technique is appropriate. 4

Award 1 mark for each bullet point up to a maximum of 4 marks:

- *A rich picture*
- *A rich picture represents a view of the whole system/it can enable better understanding of a system/includes structures, processes, issues, developments*
- *A conceptual model*
- *A conceptual model illustrates a potential system/it describes how a system should function/ it illustrates the 'must have aspects' of the system/it illustrates the desirable aspects of the system.*

Total: 10 Marks

Question 3

a) Describe the purpose of requirements capture. 3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *It determines the requirements of an organization/business*
- *It determines the requirements of end users*
- *Information from end users can be collected*
- *It determines the input/influence of stakeholders*
- *It provides stakeholders with an understanding of requirements*
- *It models a new system*
- *It determines a system's strengths*
- *It determines a system's weaknesses*

b) Identify THREE (3) factors that can affect the success of using CATWOE. 3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *Financial constraints*
- *CATWOE can be difficult to manage*
- *A lack of cooperation between a Systems Analyst and stakeholders*
- *It can take too long to reach agreement*
- *There may be insufficient focus on technical factors*

c) Explain is meant by the term *clients* in relation to CATWOE. 2

Award 1 mark for each bullet point up to a maximum of 2 marks:

- *Stakeholders for whom a system exists*
- *Who are affected by system/process changes*

d) Explain how the *owners*, referred to in CATWOE, can influence information analysis. 2

Award 1 mark for each bullet point up to a maximum of 2 marks.

- *They have the authority to make changes*
- *They have the authority to stop a project*
- *They have the authority to decide on whether to go ahead with developing a system*

Total: 10 Marks

Question 4

- a) Explain how constructing a stakeholder matrix helps a Systems Analyst to collect information in an organization. 4

Award 1 mark for each bullet point up to a maximum of 4 marks:

- *It helps to determine the people/stakeholders who have power, influence and interest*
- *It helps to determine who are the most influential people/stakeholders*
- *It helps to determine who are the least influential people/stakeholders*
- *It helps to determine which people/stakeholders need to be consulted and kept informed during information gathering*

- b) Outline FOUR (4) disadvantages of collecting information using the method referred to in question 4 (a). 4

Award 1 mark for each bullet point up to a maximum of 4 marks:

- *Stakeholders might not have time to be involved*
- *Not all stakeholders might be identified*
- *Stakeholders might not really know what they want from the system*
- *It might be difficult to gather information from stakeholders, e.g. they are too busy to attend interview, complete questionnaires or are reluctant to be observed at work*
- *Stakeholders may be reluctant to participate/stakeholders might be fearful that they may lose their jobs as a result of changes*

- c) Identify TWO (2) stakeholders associated with a manufacturing organization. 2

Award 1 mark for each bullet point up to a maximum of 2 marks:

- *Production line staff*
- *Administration staff*
- *Management*
- *Suppliers*
- *Delivery drivers*

Total: 10 Marks

Question 5

- a) Provide THREE (3) reasons why object-oriented analysis is used as an information system methodology. 3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *It focuses on the technical aspects of a system*
- *Modifiability of software can be improved*
- *Reusability of software can be improved*
- *Maintenance of software can be improved*
- *Consistency of modelling can be increased*
- *Communication between analysts, designers, programmers and users can be improved*
- *Large scale applications can be developed in modules*
- *Modules can be developed independently of each other.*

- b) Identify FOUR (4) features of an Activity model used in object oriented analysis. 4

Award 1 mark for each bullet point up to a maximum of 4 marks:

- *It illustrates the business activities of an organization*
- *It illustrates events that initiate actions and decisions*
- *It illustrates flow of events*
- *It illustrates processes*

- c) Suggest THREE (3) weaknesses of object oriented analysis. 3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *It is considered by some as too technical and complicated*
- *It is limited to modelling/describing what should be done rather than how it should be done*
- *System processes and data flows can be poorly illustrated and/or described.*

Total: 10 Marks

Question 6

- a) State FOUR (4) ways of how ETHICS can be used to support the analysis of an information system. 4

Award 1 mark for each bullet point up to a maximum of 4 marks:

- *It focuses analysis on the interaction between users and technology*
- *It can be used to facilitate systems which are technically efficient*
- *it considers job satisfaction as important as technical considerations*
- *By considering job satisfaction, it can result in improved output and productivity*
- *It focuses on the knowledge fit/psychological fit/task structure fit/ Efficiency fit/ethical fit*

- b) Outline THREE (3) disadvantages of using a process oriented methodology when analysing an information system. 3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *It focuses on a hard approach to systems analysis*
- *There is little involvement of the user*
- *It neglects the human/social/ organisational impacts of system*
- *It is less flexible than other methodologies*

- c) Identify THREE (3) groups of people in an organisation who could be involved if a people oriented methodology is adopted for analysis. 3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *End users*
- *Developers*
- *Managers*
- *Staff at all levels*

Total: 10 Marks

Question 7

- a) Why is it important to consider an organisation's knowledge base when undertaking information systems analysis? 3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *It can provide an organisation with a competitive advantage*
- *It can enable high standards of performance*
- *It can be shared between staff and between departments in an organisation and this helps to improve an organisation's competency*
- *It is one of the most flexible resources of an organisation as it can increase/be developed as time goes by*

- b) State FOUR (4) reasons why PEST is used as an analytical technique. 4

Award 1 mark for each bullet point up to a maximum of 4 marks:

- *It can be used to analyse the political influences on an organisation.*
- *It can be used to analyse the economic influences on an organisation.*
- *It can be used to analyse the social influences on an organisation.*
- *It can be used to analyse the technological influences on an organisation.*

- c) Identify THREE (3) aims of SWOT analysis. 3

Award 1 mark for each bullet point up to a maximum of 3 marks.

- *To discover an organization's strengths.*
- *To discover an organization's weaknesses.*
- *To discover opportunities for an organization.*
- *To discover threats to an organization.*

Total 10 Marks

Question 8

- a) Identify FOUR (4) economic factors that can influence the development of an organisation's information system. 4

Award 1 mark for each bullet point up to a maximum of 4 marks:

- **Demand**
- **Supply**
- **Market growth**
- **Market decline**
- **The labour market**
- **Government policies and regulations**
- **Interest rates**

- b) Provide FOUR (4) examples of technical problems that limit an organisation's information system development. 4

Award 1 mark for each bullet point up to a maximum of 4 marks:

- **Lack of finance**
- **Lack of technical knowledge**
- **Lack of quality resources**
- **Unrealistic timescales for implementation**
- **Lack of training**
- **System components will be developed individually leading to possible system incompatibility/extra costs/extra time/inefficiencies**
- **Insufficient funding/budget**
- **Design too complex**
- **Inexperienced developers**

- c) Propose TWO (2) solutions that address economic and technological limitations to system development. 2

Award 1 mark for each bullet point up to a maximum of 2 marks.

- **Identified problems and issues should be documented/a requirements specification should be produced acknowledging problems and issues**
- **A requirements specification should produce solutions and/or recommendations**
- **Agreement should be reached between systems analyst and stakeholders that solutions/recommendations are feasible**

Total: 10 Marks

Question 9

- a) State THREE (3) tasks that should be performed during the analysis and specification of requirements for developing a human computer interface. 3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- **Produce a problem statement definition**
- **User analysis**
- **Task analysis**
- **Produce a requirements specification**
- **Model an interface**
- **Design an interface**
- **Evaluate an interface design**

- b) Outline THREE (3) types of demographic data associated with system users. 3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- **Age**
- **Gender**
- **Educational level**
- **Position at the organization**
- **Cultural background**
- **Any special requirements**
- **Technology training and knowledge**
- **Experience with similar systems/products**

- c) Briefly explain what is meant by task analysis and user analysis **and** provide ONE (1) example of each form of analysis. 4

Award 1 mark for each bullet point up to a maximum of 4 marks:

- **Task analysis identifies various aspects of tasks.**
- **For example, task workflow/ distribution of work/a user's work skills/frequency of use of technology/the order in which tasks are performed**
- **User analysis identifies the characteristics of interface users.**
- **For example, their skills and knowledge, organisation specific skills and knowledge.**

Note: Credit valid alternative examples.

Total 10 Marks

Question 10

- a) Outline FOUR (4) informal evaluation methods to evaluate the interface of an information system 4

Award 1 mark for each bullet point up to a maximum of 4 marks:

- *Heuristic evaluation*
- *Cognitive walkthroughs*
- *Predictive modelling*
- *Guidelines review*
- *Consistency inspection*
- *Critical event analysis*
- *Dialogue error analysis*
- *Usability testing*
- *Expert reviews*

- b) Briefly discuss the objectives of heuristic evaluation. 3

Award 1 mark for each bullet point up to a maximum of 3 marks.

- *It can be used to identify usability problems.*
- *It is not undertaken by users of the system being evaluated*
- *It is undertaken by an impartial evaluator.*
- *An observer answers an evaluator's questions about the interface.*
- *An observer provides advice on using an interface.*
- *The evaluator states what they don't like about the interface and their reasons why.*

- c) Suggest THREE (3) types of user experience goals used to evaluate user interface design. 3

Award 1 mark for each bullet point up to a maximum of 3 marks:

- *The interface is aesthetically pleasing*
- *It is enjoyable to use*
- *It motivates users*
- *It engages users*
- *It is reliable*

Total: 10 Marks

End of Examination Paper

Learning Outcomes matrix

Question	Learning Outcomes assessed	Marker can differentiate between varying levels of achievement
1	1	Yes
2	1	Yes
3	2	Yes
4	2	Yes
5	3	Yes
6	3	Yes
7	4	Yes
8	5	Yes
9	6	Yes
10	6	Yes

Grade descriptors

Learning Outcome	Pass	Merit	Distinction
Understand soft and hard approaches to the analysis of information systems	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand the techniques associated with requirements capture	Demonstrate adequate understanding of techniques	Demonstrate robust understanding of techniques	Demonstrate highly comprehensive understanding of techniques
Understand the different viewpoints associated with IS methodologies	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Be able to apply various analytical techniques for understanding a complex organisational environment	Demonstrate adequate and appropriate application of techniques	Demonstrate sound and consistently appropriate application of techniques	Demonstrate detailed and highly appropriate application of techniques
Understand the relationship between the economic, social, political and technical factors influencing a business problem	Demonstrate adequate level of understanding	Demonstrate robust level of understanding	Demonstrate highly comprehensive level of understanding
Understand and apply the principles of interface design and the requirements and characteristics of users that motivate these	Demonstrate adequate and appropriate application of principles	Demonstrate sound and consistently appropriate application of principles	Demonstrate detailed and highly appropriate application of principles