2920/201
SYSTEMS ANALYSIS AND DESIGN
July 2017
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

MODULE II

SYSTEMS ANALYSIS AND DESIGN

3 hours

INSTRUCTIONS TO THE CANDIDATES

This paper consists of ***EIGHT*** *questions.*
Answer any ***FIVE*** *questions in the answer booklet provided*
Candidates should answer the questions in English.

This paper consists of 4 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

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1. (a) (i) Outline **two** desirable qualities of a good program code design. (2 marks)

(ii) Outline **three** reasons that could influence a system designer to use functional decomposition. (3 marks)

(b) (i) State **two** skills expected of a systems analyst. (2 marks)

(ii) Differentiate between *black- box* and *grey- box* testing methods. (4 marks)

(c) Clifford intends to use system flow chart to analyze a proposed information system. Outline **three** symbols that he is likely to use in the chart. (3 marks)

(d) Irene was required to carry out training on a new system without interfering with the normal operations on the organization.

(i) Explain the most appropriate training method that she could use. (2 marks)

(ii) Explain **two** challenges that she could experience while using the training method identified in (i). (4 marks)

2. (a) Differentiate between *investigation* and *fact recording* as used in feasibility studies. (4 marks)

(b) Use case diagrams are popular in system analysis. Describe **three** advantages of the tool that could be influencing this trend. (6 marks)

(c) Paul intends to use data dictionaries to analyze a proposed information system. Outline **four** components of this tool. (4 marks)

(d) A lecturer described roles of system documents to a SAD class. Describe **three** roles that he could have mentioned. (6 marks)

3. (a) Define the term *Net Present Value (NPV)* as used in project evaluation.. (2 marks)

(b) Explain **two** factors that should be considered when creating terms-of-reference during problem identification. (4 marks)

(c) (i) Petro would like to design a deterministic system for the final year project. Explain **two** typical characteristics that could be exhibited by this type of a system. (4 marks)

(ii) Differentiate between *risk* and *uncertainty* as used in project management. (4 marks)

(d) Tom intends to test a system with modules that were developed and tested separately.

(i) Explain the most appropriate testing method that he could use to achieve his goal. (2 marks)

(ii) Explain **two** methods of carrying out the testing method identified in (i). (4 marks)

4. (a) (i) Describe an *expert system* as used in information systems. (2 marks)

(ii) State **two** qualities of a good input form. (2 marks)

(b) (i) Outline **two** roles of a super user in an information system. (2 marks)

(ii) Differentiate between *face-to-face interview* and *telephone interview*. (4 marks)

(c) Dorothy intends to use an open loop control system in a proposed information system. Outline **four** attributes of this loop that could be exhibited in the system. (4 marks)

(d) An organization intends to procure a Management Information System. Explain **three** roles of this type of information system. (6 marks)

5. (a) Outline **two** signs of system obsolescence. (2 marks)

(b) Explain **two** reasons for replenishing resources in a project. (4 marks)

(c) True-Life Company Ltd. intends to install new information to replace their entire legacy system as a matter of urgency. Assume you are hired as a systems analyst:

(i) Identify the most appropriate changeover strategy that you could use justifying your answer. (2 marks)

(ii) **Explain two** possible risks that the company would realize while using the changeover strategy identified in (i). (4 marks)

(d) Read the following narrative to answer the question that follows.

Jasho Sacco opens new branches in major towns by registering the details (branch code and branch name), which are stored in a branch file at the head office. The branches register new members by processing applications from prospective members whose details are then stored in the members file.
The customer service officer is then required to open a FOSA account of the new Sacco members' and issue a Sacco membership card. When a Sacco member wants to make a transaction at the branch, he/she is required to produce a Membership card and national identity card for verification purposes. The member is then required to specify the type of transaction to be carried out. On completion the member is issued a transaction receipt and the transaction file updated.

Draw a level 1 dataflow diagram to model the narrative into a system. (8 marks)

6. (a) Outline **three** disadvantages of using waterfall model in systems development. (3 marks)

(b) (i) Describe Structured English as used in system design. (2 marks)

(ii) Outline **three** signs of derailing projects. (3 marks)

(c) Jambo Football Academy intends to select a team for a tournament. A team member should be at least 4.3 feet tall and weigh at least 50 kilograms with a clean bill of health. Draw a limited entry decision table to represent the team selection processes. (6 marks)

(d) Julie was required to implement various keys in proposed database systems. Explain **three** types of keys that she could have selected. (6 marks)

7. (a) Outline **two** applications of cloud computing in systems analysis and design. (2 marks)

(b) With the aid of a symbol, outline each of the following type of nodes in a decision tree:

(i) chance/event; (2 marks)

(ii) terminal/edge; (2 marks)

(iii) decision. (2 marks)

(c) System projects are susceptible to several types of risks. Explain **two** types of risks that are likely to be experienced. (4 marks)

(d) (i) Break through analysis is normally used as a project evaluation tool. Explain **two** of its advantages. (4 marks)

(ii) An information system project has stakeholders who should do a follow up for its success. Outline **four** examples of such stakeholders. (4 marks)

8. (a) (i) Explain **two** types of systems documents that could be found in system development life cycle. (4 marks)

(ii) Explain the term *perpetual license* as applied in software acquisition. (2 marks)

(b) S&S Company Ltd. intends to redesign the input form for its information system to allow users capture data easily.

(i) Assume that you are hired as a consultant; describe the type of maintenance that you would recommend. (2 marks)

(ii) Explain **two** precautions that should be considered while using the maintenance method identified in (i). (4 marks)

(c) Table 1 shows activities and durations for an information system project. Use it to answer the questions that follow.

Activities		**Predecessor**	**Duration**
A	Proposal	-	2
B	Prototyping	A	3
C	User needs engineering	-	3
D	Quotation and contract signing	B,C	13
E	Implantation of prototype	B,C	5
F	Commissioning of new system	E	10
G	Review meeting	D,F	2

Table 1

(i) Draw a network diagram showing the earliest start times (EST) and latest start times (LST). (8 marks)

(ii) Determine the critical path for the project. (2 marks)

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