# SYSTEMS ANALYSIS AND DESIGN

## July 2015

## THE KENYA NATIONAL, EXAMINATIONS COUNCIL

## DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

## MODULE 2.

1. (a) (i) Explain the term information technology as used in systems analysis and design. (2marks)

(i) Outine two characteristics of a knowledge based system. (2 marks)

(b) (i) Outline two types of system users that could be found in organizations. (2 marks)

(ii) Differentiate between open questionnaire and closed questionnaire as used in data collection. (4marks)

(c)Rita was required to investigate the advantages of a closed loop system. Explain two advantages that she is likely to have identified. (4 marks)

(d) With the aid of an example in cach case, describe each of the following types of Information systems:

(i) MIS     (3 Marks)

(ii) TPS.    (3marks)

(2)  (a) Explain the term data type as applied in system design. (2 Marks)

(b) Explain two disadvantages of observation as used in data collection.  (4 marks)

(C) (i) Suszy was required to create a TOR for a proposed information system in her company. Outline four reasons that could have necessitated creation of this document (4marks)

(ii) Differentiate between a project scope and a project schedule as applied in Project magement  (4 marks)

(d) Vicky was required to prepare a system training session for a client that will be conducted during the working hours.

(i) Explain the most appropriate training method that she could use to achieve her  goal (2marks)

(ii) Explain two challenges that are likely to be experienced during the training.  (4 marks)

3 (a) Differentiate between economical and technical feasibility studies.  (4marks)

(b) With the aid of a diagram, describe the stages in system development life cycle using a

spiral model  (6 marks)

(c) Paul intends to use a use case diagram to analyze a proposed information system, Outline four advantages he would realize while using the tool. (4 marks)

(d) Leah intends to use functional decomposition to analyze an information system for a client. Explain three benefits he would realize when using the tool  (6 marks)

4 (a) (i) Outline two technical factors that should be considered when selecting system design methodologies. (2 marks)

(ii) Outline three strengths of object oriented methodology as used in system development   (3 marks)

(b) (i) Outline two roles of a system designer in an organization (2 marks)

(ii) Differentiates between black box and white box testing methods (4 marks)

(c) With the aid of a sketch in each case, outline three components of system flow chart. (6marks)

(d) Brian intends to carry out system testing with users in order to ascertain that it meets their requirements. He prefers to release trial versions to users in order to achieve his objective.

(i) Explain the type of testing strategy employed by Brian. (2 marks)

(ii) Explain two drawbacks of the strategy explained in (i) above.   (4 marks)

5 (a) Outline two factors that could necessitate system review.  (2 marks)

(b) Explain two strategies that could be used to manage risks in system project  (4 marks)

(c) Tana Company ltd intends to implement a new information system in stages for all its branches in Kenya. Assume you are hired as a systerns analyst:

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

(ii) Explain two advantages of the changeover strategy identified in (i). (4 marks)

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

Tangazeni College intends to automate its admission process. Prospective students are required to fill their details in the college website which are vetted and stored in the prospectus file. The applicants that meet requirements are notified through the email provided in their registration form; their details are stored on the waiting list file whereas the rejected applicants details are stored in the applicant log file for future recommendation. Once the shortlisted applicant receives notification email they are required to attend entry interview in the college and are required to produce their original academic certificates and testimonies. Before the interview, the applicant's sign-in attendance list and their certificates are also scrutinized to verify their authenticity; the details of attendance and authenticity

of the certificate are then stored in the attendance and certificates authenticity files respectively. Successful applicants are assigned admission number and notified through emai to pay fees. Details of successful applicant who are yet to pay fee are stored in enroll file for a period of one month. Similarly, applicants that pay their fee in time are assigned class and their details stored in student file and payment file respectively.

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

6. (a) Outline two measures that could be adopted by organizations to cope with the challenges or the emerging trends in systems analysis and design. (2marks)

(b) Naomi has designed a database with the following keys clearly defined. Explain the function of each keys:

(i) primary   (2 marks)

(ii) Index      (2marks)

(iii) Foreign.   (2marks)

(c) Caleb noted With concern that an information system project that he supervising was derailing.

 Outline  four possibe causes ot the derailment. (4 marks)

(d) (i) Gloria was required to prepare a budget for a proposed project in her company.

Explain two significances of the budget  (4 marks)

(ii) A certain company advertised for a project manager. Outine four responsibilities that are likely to be part of the advert. (4 marks)

7. (a) (i) Explain two challenges that could be experienced when developing a user manual  (4marks)

(ii) Explain the term coupling as used in system design. (2marks)

(b) Valley-Crest Ltd. intends to carry out a routine maintenance despite of any report issue with the system,

(i) Identify the most appropriate type of maintenance it could use justifying your answer. (2marks)

(ii)Explain two advantages that could be experienced with the type of maintenance in (i) above   (4 marks)

(c) Table 1 shows activities and durations for an information system project. Use it to

answer the questions that follow.

| | Activity | Predecessor | Duration |
|---|---|---|---|
| A | Select prototype | - | 5 |
| B | Develop prototype | A | 6 |
| C | Testing | - | 6 |
| D | Review | B,C | 15 |
| E | Walkthrough | B,C | 7 |
| F | Final testing | E | 5 |
| G | Review | D,F | 5 |

Table 1

(i) Draw a network diagram to represent the project activities.  (6 marks)

(ii) Show the critical path of the project (2marks)

(8 ) (a) Outline three desirable features of a functional requirement.  (3 marks)

(b) (i) Explain the term prototype as used in system design. (2 marks)

(ii) Outline three examples of stakeholders that could be involved when carrying out system project in organizations (3 marks)

(c) Explain cach of the following types of decision table:

(i) Limited entry; (2 marks)

(ii) Exended entry (2 marks)

(iii) Mixed entry. (2marks)

(d) 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  (2marks)

(iii) decision  (2marks)