

Name _____ Index No. _____

2920/201
SYSTEMS ANALYSIS AND DESIGN
July 2015
Time: 3 hours

Candidate's Signature: _____

Date _____

**THE KENYA NATIONAL EXAMINATIONS COUNCIL****DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY****MODULE II****SYSTEMS ANALYSIS AND DESIGN****3 hours****INSTRUCTIONS TO CANDIDATES**

*Write your name and index number on the question paper in the spaces provided above.
 Sign and write the date of examination in the spaces provided above.
 Answer any **FIVE** of the following **EIGHT** questions in the spaces provided
 All questions carry equal marks.
 Candidates should answer the questions be in English.*

For Examiner's Use Only

Question	1	2	3	4	5	6	7	8	Total Score
Candidate's Score									

This paper consists of 12 printed pages.

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

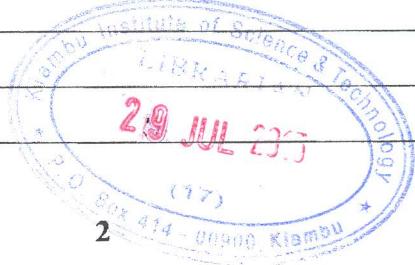
1. (a) (i) Explain the term *information technology* as used in systems analysis and design.
(2 marks)

- (ii) Outline **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. (4 marks)

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



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

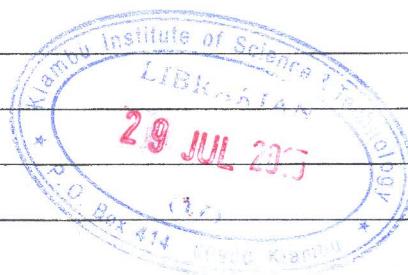
(i) MIS; (3 marks)

(ii) TPS. (3 marks)

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. (4 marks)



- (ii) Differentiate between a *project scope* and a *project schedule* as applied in project management. (4 marks)

- (d) Vicky was required to prepare a system training session for a client that would be conducted during the working hours.
- (i) Explain the most appropriate training method that she could use to achieve her goal. (2 marks)

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

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



- (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)

- (i) 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. (3 marks)



(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). (4 marks)

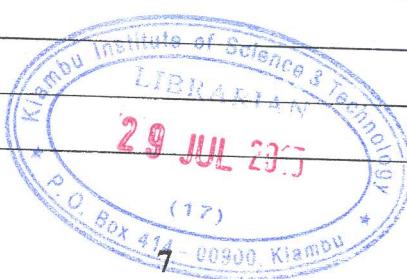
5. (a) Outline **two** factors that could necessitate system review. (2 marks)

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

(c) Iana Company Ltd intends to implement a new information system in stages for all its branches in Kenya. 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** 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 in waiting list file whereas rejected applicants details are stored on 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 email 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 1 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 of the emerging trends in systems analysis and design. (2 marks)

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

(i) primary; (2 marks)

(ii) index; (2 marks)

(iii) foreign. (2 marks)

- (c) Caleb noted with concern that an information system project that he supervising was derailing. Outline **four** possible causes of 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. Outline **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. (4 marks)

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

- (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. (2 marks)

- (ii) Explain **two** advantages that could be experienced with the type of maintenance 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.

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. (2 marks)

8. (a) Outline **three** desirable feature 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 a system project in organizations. (3 marks)

- (c) Explain each of the following types of decision table:

- (i) limited entry; (2 marks)

- (ii) extended entry; (2 marks)

- (iii) mixed entry. (2 marks)

- (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; (2 marks)

- (iii) decision. (2 marks)

