2920/201
SYSTEMS ANALYSIS AND DESIGN
November 2022
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

MODULE II

SYSTEMS ANALYSIS AND DESIGN

3 hours

INSTRUCTIONS TO CANDIDATES

*This paper consists of **EIGHT** questions.*
*Answer **FIVE** of the **EIGHT** questions in the answer booklet provided.*
All questions carry equal marks.
Candidate to 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.

Turn over

1. (a) (i) Outline **two** roles of a system owner in system development. (2 marks)

(ii) Describe **two** components of an expert system. (4 marks)

(b) With the aid of a diagram, describe an open system. (4 marks)

(c) Differentiate between *alpha* and *beta* system testing. (4 marks)

(d) Keytech Company implemented a Management Information System (MIS). Explain **three** benefits the company could accrue from its use. (6 marks)

2. (a) Define slack time as used in project management. (2 marks)

(b) State the stage in the System Development Lifecycle (SDLC) where each of the following is a deliverable:

(i) Terms of Reference (TOR); (1 mark)

(ii) Program Specification; (1 mark)

(iii) Feasibility report; (1 mark)

(iv) Project Initiation Document. (1 mark)

(c) (i) Differentiate between *form* and *command line* interfaces as used in dialog design. (4 marks)

(ii) Tumaini Institute intends to load existing student records into a new system. Describe **two** file conversion methods they could use. (4 marks)

(d) A logistics company has a fleet of vehicles. Each vehicle is identified by a unique vehicle number, weight and destination. A vehicle can transport different items to different destinations. A destination has an address and a name. A vehicle follows a schedule that has a unique number and route.

Draw an Entity Relationship Diagram to represent this logic. (6 marks)

3. (a) (i) Outline **three** limitations of a Gantt chart as used in project management. (3 marks)

(ii) Explain **two** advantages of using Structured English as a system design tool. (4 marks)

(b) Mary used spiral model methodology during system development. Outline **three** reasons for using this methodology. (3 marks)

(c) James created a data dictionary for a system he was developing. Outline **four** symbols he is likely to have used. (4 marks)

(d) Dwelfix Company acquired an Information System through outsourcing method. Explain **three** circumstances that could have led to the use of this method. (6 marks)

4. (a) Outline **four** qualities of a good system documentation. (4 marks)

(b) Differentiate between *payback* period and *return on investment* cost benefit analysis techniques. (4 marks)

(c) Jack used object oriented programming methodology to develop an online system. Explain **three** attributes of this methodology. (6 marks)

(d) A group of students prepared a questionnaire for a system study. Describe **three** categories of questions they could have included in the questionnaire. (6 marks)

5. (a) Explain each of the following terms as used in system development:

   (i) perfective maintenance; (2 marks)

   (ii) structured walkthrough. (2 marks)

   (b) RelayTec company developed a prototype for a new system. Explain **three** benefits of using this design method. (6 marks)

   (c) Differentiate between *Project Evaluation and Review Technique (PERT)* and *Critical Path Method (CPM)*. (4 marks)

   (d) Students at Mlinzi Technical College accesses academic report through an online learner's portal. A student signs up on the portal by filling details on an online form. The details are stored in a register file. A verification link is then sent to the student's e-mail. The student uses the link to change the default password. To access the report, a student is required to login using registration number and password.

   Draw a level 1 data flow diagram to represent this information. (6 marks)

6. (a) Outline **four** characteristics of a user-friendly software. (4 marks)

   (b) Explain **three** importance of system analysis. (6 marks)

   (c) A student intends to undertake an ICT project. Explain **two** constraints the student is likely to encounter at the inception stage. (4 marks)

   (d) Table 1 shows details of an information system project. Use it to answer the question that follows.

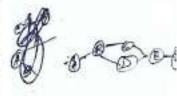|	Activity	Predecessor	Duration
A	Assembly	-	3
B	Resource allocation	A	5
C	Installation	B	4
D	Configuration	B	6
E	Testing	C, D	5
F	Going live	E	3

Table 1

Draw a network analysis diagram for the project. (6 marks)

7. (a) (i) Outline **two** problem indicators for development of an Information System. (2 marks)

   (ii) Explain **two** advantages of normalization in database design. (4 marks)

   (b) Distinguish between *data reliability* and *data integrity* as used in system security. (4 marks)

   (c) A company implemented a new system without training the users. Explain **two** challenges the users are likely to face when using the system. (4 marks)

   (d) A company developed a mobile application module system for their operations.

   (i) Describe the most appropriate change over method the company could use. (2 marks)

   (ii) Explain **two** limitations of the changeover method in (i). (4 marks)

8.   (a)   (i)   Outline **three** cloud computing services an organization could use for an Information System.   (3 marks)

             (ii)   Explain **two** challenges of conducting focus group interview through videoconferencing.   (4 marks)

      (b)   The management of a company stopped funding an ongoing ICT project citing its likelihood of failure. Outline **four** signs this project could have been exhibiting.   (4 marks)

      (c)   Distinguish between *legal* and *social* feasibility studies.   (4 marks)

      (d)   David used a decision table to design a system. There are three conditions C1, C2 and C3 and two possible outcomes D1 and D2. If two of the conditions are met, D1 applies, otherwise D2.

           Represent this logic in a limited entry decision table.   (5 marks)

THIS IS THE LAST PRINTED PAGE.

easytvet.com