1. (a) (i) Outline **two** typical qualities of a systems analyst in organizations. (2 marks)

   (ii) Distinguish between *scientific* and deterministic approaches as used in systems thinking. (4 marks)

   (b) Explain **three** limitations of hard system thinking as used in development. (6 marks)

   (c) (i) Outline **four** elements of a system design. (4 marks)

   (ii) Alice intends to create system documentation for her company's information system. Explain **two** uses of the documentation. (4 marks)

2. (a) Explain the term *robustness* as used in information. (2 marks)

   (b) Differentiate between *input mask* and *validation* text as used in data input. (4 marks)

   (c) (i) Explain the term *respondent* as used in system investigation. (2 marks)

   (ii) Maria was discussing benefits of usability as a quality in system design. Explain **two** benefits she could have emphasized. (4 marks)

   (d) (i) Liz intends to select a file organization method for an information system. Outline **four** criteria that she is likely to consider. (4 marks)

   (ii) Joy was required to formulate a term of reference document for a proposed information system. Outline **four** factors that she could consider to carry out the task. (4 marks)

3. (a) Differentiate between *one-off* costs and *intangible* costs as used systems analysis. (4 marks)

   (b) Maro intends to use Entity Life History (ELH) model to analyze a proposed information system. Explain **two** advantages of the model. (4 marks)

   (c) With the aid of adiagram in each case, describe the following types of relationships:

   (i) one-to-many; (2 marks)

   (ii) many-to-many. (2 marks)

   (d) (i) Explain **two** weaknesses of Hierarchical Input Process-Output (HIPO) charts as used in systems design. (4 marks)

   (ii) Jorum used phased changeover during implementation of an information system. Explain **two** possible drawbacks of the changeover strategy. (4 marks)

4. (a) (i) State **two** participants that could be invited for walkthrough meetings during systems development. (1 mark)

   (ii) Outline **three** types of applications controls that could be incorporated in an information system. (3 marks)

   (b) Cindy, an intern student with a certain system development company was required to develop a test plan for information. Outline **four** guidelines that she could use. (4 marks)

   (c) With the aid of diagram in each case, describe **two** symbols that could be found in a program flowchart. (4 marks)

   (d) County Coffee Society Ltd. intends to develop a system to automate its operations. When a farmer delivers the coffee harvest to designated coffee milling station, the farmer's details are retrieved from farmers file for verification purposes. The farmer then proceeds to put his/her coffee bags on the weighing machine. The attendant then updates the farmer's delivery file and copy receipt is issued to farmer. The farmer may then proceed to the store to take farm inputs and foods. At the store, the attendant up dates the borrowers file and generates an invoice. At the end month, the accountant of the milling station is required to process farmer's payment and record on the farmer's debit file transmit the money to the farmer's bank account.

   Draw a dataflow diagram to represent the system. (8 marks)

5. (a) (i) Outline **two** characteristics of graphical user interface. (2 marks)

   (ii) Differentiate between *verification* and *validation* as used in waterfall model. (4 marks)

   (b) Aaron was preparing for a presentation on reasons that necessitates system maintenance. Outline **four** reasons that he is likely to have listed on his presentation. (4 marks)

   (c) Dan used black-box testing on an information system that he was developing. Outline **four** limitations that he could experience. (4 marks)

   (d) Raph intends to use prototyping for determining user requirements only.

   (i) Explain the most appropriate type of prototype he could have used. (2 marks)

   (ii) Explain **two** advantages of the type of prototyping in (i). (4 marks)

6. (a) (i) Outline **three** benefits of carrying out systems analysis in organizations.

(3 marks)

(ii) Differentiate between *probabilistic* and *adaptive* systems. (4 marks)

(b) Explain **three** circumstances that would necessitate use of decision support system (DSS) in organizations. (6 marks)

(c) (i) Explain the term *environment* as used in information systems. (2 marks)

(ii) Jose intends to carry-out an on job training for an information system that he was developing for one of his clients. Outline **five** methods that he is likely to use. (5 marks)

7. (a) (i) Outline **three** logical security measures that could be incorporated in a system.

(3 marks)

(ii) Flo was required to review a user manual document that was rejected by system users. Assume you were consulted by Flo, advice her on **four** qualities that she could consider on the document. (4 marks)

(b) Fred intends to use state transition diagram to design a proposed information system. Explain **two** benefits that he would realize from using the preferred design tool.

(4 marks)

(c) Describe each of the following SDLC models:

(i) iterative; (2 marks)

(ii) spiral. (2 marks)

(d) Angie intends to design a questionnaire for collecting data during feasibility studies. Outline **five** guidelines that she could use to achieve her goal. (5 marks)

8. (a) Explain each of the following terms as used in system design:

(i) modularity; (2 marks)

(ii) cohesion. (2 marks)

(b) A group of students were carrying out an assignment on characteristics of an information system. Outline **four** characteristics that they are likely to have listed.

(4 marks)

(c) (i) Explain the term *selection bias* as used in feasibility study. (2 marks)

(ii) With the aid of a diagram, describe a closed-loop system. (4 marks)

(d)   Jemo was required to review an information system in order for it to accommodate a
       new technology.

    (i)   Identify the most appropriate type of maintenance that he could have used
            justifying your answer.   (2 marks)

    (ii)   Explain **two** challenges he could have experience while carrying out the
            maintenance identified in (i).   (4 marks)