



MACHAKOS UNIVERSITY

University Examinations for 2022/2023 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR SECOND SEMSTER EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 101: SYSTEM ANALYSIS AND DESIGN

DATE: 17/4/2023

TIME: 2:00 – 4:00 PM

INSTRUCTIONS

This paper consists of FIVE questions

*Answer **question one** and other **two questions** in this paper*

QUESTION ONE (30 MARKS)

- a) Define system analysis and design (2 marks)
- b) System testing is about verification and validation, discuss THREE types testing involved during system development lifecycle (6 marks)
- c) Ken, a system analyst has created a new system for a client. Explain THREE change over methods that may be used to implement the system. (6 marks)
- d) Describe how system structured analysis and design differ from Object oriented analysis system. (4 marks)
- e) State the FIVE common activities involved in all the process models used in system analysis and design. (5 marks)
- f) Distinguish between functional and non-functional requirements (4 marks)
- g) Illustrate using a diagram the common errors found during the development of data flow diagrams (DFDs) (3 marks)

QUESTION TWO (20 MARKS)

- a) An information system is integrated and co-ordinates network of components, which combine together to convert data into information. Explain THREE elements of the information system structure. (5 marks)
- b) Explain when in the system development life cycle a feasibility study document would be produced, and describe the contents of terms of reference (TOR) document. (7 marks)

- c) Feasibility study is a critical stage in system development life cycle, discuss THREE types of feasibility study (6 marks)
- d) State TWO types of documentations prepared during system development. (2 marks)

QUESTION THREE (20 MARKS)

- a) System design is the phase that bridges the gap between problem domain and the existing system in a manageable way. Discuss FOUR inputs and outputs of the system design (8 marks)
- b) Using appropriate diagrams, illustrate the three types of entity relationships used in system analysis and design. (6 marks)
- c) Explain THREE key responsibilities of the project committee in information system development project. (6 marks)

QUESTION FOUR (20 MARKS)

- a) Outline FOUR advantages of using questionnaires as a fact-finding method (4 marks)
- b) Describe the difference between an iterative/incremental and waterfall System Development Life Cycle (SDLC). Illustrate your answer with diagrams (6 marks)
- c) A mobile lending application has a class named LOAN and two subclasses PERSONAL and BUSINESS. LOAN has attributes *LoanID*, *LoanStatus* and *Period*. PERSONAL has attributes *PerID*, *PerName* and *Amount* while BUSINESS has attributes *BusID*, *BusName* and *Amount*. Represent this information in a class diagram (4 marks)
- d) For an organization to develop a system, the idea has to be initiated from different sources, discuss THREE areas where information systems projects originate from. (6 marks)

QUESTION FIVE (20 MARKS)

- a) Explain the term DFD and with the aid of a diagram, explain FOUR DFD symbols. (5 marks)
- b) A developer intends to use object-oriented methodology for a proposed information system in his company. Explain THREE viewpoints used in object modelling techniques that he could realize while using this methodology. (6 marks)
- c) John was required to carry out training of new users for a new information system in an organization
 - i. State the most appropriate category of users that should be the last to be trained as per organizational structure (3 marks)
 - ii. Explain THREE challenges that are likely to be experienced during the training (6 marks)