



# **MAASAI MARA UNIVERSITY**

**REGULAR**

**UNIVERSITY EXAMINATIONS**

**2019/2020 ACADEMIC YEAR**

**SECOND YEAR SECOND SEMESTER**

**SCHOOL OF SCIENCE AND INFORMATION SCIENCES**

**DEPARTMENT OF COMPUTING AND INFORMATION**

**SCIENCE**

**BACHELOR OF SCIENCE IN INFORMATION**

**SCIENCES**

**COURSE CODE: INS - 2103**

**COURSE TITLE: SYSTEMS ANALYSIS AND DESIGN**

**DATE: 11<sup>TH</sup> DEC, 2019**

**TIME: 11:30 - 13:30 2 HOURS**

**INSTRUCTION TO CANDIDATE**

- i. Question **ONE** in section A is compulsory
- ii. Answer any **OTHER Two (2)** Questions from section B
- iii. Use diagrams, example and illustration where necessary
- iv. All questions in section B have equal marks

## **SECTION A: COMPULSORY [30 MARKS]**

### **QUESTION ONE**

- i. The term "System" is derived from the Greek word "systema". Define [2 marks]
- ii. Explain the following basic elements of the system:
  - a. " Resources [2 marks]
  - b. " Procedures [2 marks]
  - c. " Data/Information [2 marks]
  - d. " Processes [2 marks]
- iii. Distinguish between the following systems classification
  - a. Physical or Abstract System [2 marks]
  - b. Open Closed System [2 marks]
- iv. Define the term "Information System" [2 marks]
- v. Information system can be FORMAL or INFORMAL differentiate [4 marks]
- vi. Explain any two types of information system [4 marks]
- vii. Define the following terms
  - a. System analysis [2 marks]
  - b. System design [2 marks]
  - c. System analyst [2 marks]

## **SECTION B: ANSWER ANY TWO QUESTION [40 MARKS]**

### **QUESTION TWO [20 MARKS]**

- i. State and explain Four categories of end users of the system [8 marks]
- ii. Read the following case study

KHEU Library is the biggest library in Kericho County. Currently it has about 300 members. A person who is 18 or above can become a member. There is a membership fee of Ksh 400 for a year. There is a form to be filled in which person fills personal details. These forms are kept in store for maintaining members' records and knowing the membership period.

A member can issue a maximum of three books. He/she has three cards to issue books. Against each card a member can issue one book from library. Whenever a member wishes to issue a book and there are spare cards, then the book is issued. Otherwise that request is not entertained. Each book is to be returned on the specified due date. If a member fails to return a book on the specified date, a fine of Ksh 2 per day after the due return date is charged. If in case a card gets lost then a duplicate card is issued. Accounts are maintained for the membership fees and money collected from the fines.

There are two librarians for books return and issue transaction. Approximately 100 members come to library daily to issue and return books. There are 5000 books available out of which 1000 books are for reference and cannot be issued.

Records for the books in the library are maintained. These records contain details about the publisher, author, subject, language, etc. There are suppliers that supply books to the library. Library maintains records of these suppliers. Many reports are also produced. These reports are for details of the books available in the library, financial details, members' details, and supplier's details.

Currently all functions of the library are done manually. Even the records are maintained on papers. Now day by day members are increasing. Maintaining manual records is becoming difficult task. There are other problems also that the library staff is facing, like in case of issue of duplicate cards to a member when member or library staff loses the card. It is very difficult to check the genuinely of the problem.

Sometimes the library staff needs to know about the status of a book as to whether it is issued or not.

So to perform this kind of search is very difficult in a manual system. Also management requires reports for books issued, books in the library, members, and accounts manually producing the reports is a cumbersome job when there are hundreds and thousands of records.

Management plans to expand the library, in terms of books, number of members and finally the revenue generated. It is observed that every month there are at least 50-100 requests for membership. For the last two months the library has not entertained requests for the new membership as it was difficult to manage the existing 250 members manually. With the expansion plans, the management of the library aims to increase its members at the rate of 75 per month. It also plans to increase the membership fees from 400 to 1000 for yearly and 500 for half year, in order to provide its members better services, which includes increase in number of books from 3 to 4.

Due to the problems faced by the library staff and its expansion plans, the management is planning to have a system that would first eradicate the needs of cards, a system to automate the functions of record keeping and report generation, and which could help in executing the different searches in a faster manner, the system to handle the financial details.

- i. State the objective of the KHEU library system

**[2 marks]**

- ii. Outline any five function units of the library system

- iii. As an analyst identified and state any five problems in the existing system that lead the Management team accept automation process [5 marks]

[5 marks]

**QUESTION THREE [20 MARKS]**

- a. Outline the six major Activities involved in any Life cycle Model [6 marks]
- b. The feasibility of the system is evaluated on the three main issues, state and explain [6 marks]
- c. Implementation is a critical phase in any life cycle model discuss [4 marks]
- d. Explain each of the following as applied in Implementation Phase of SDLC
- i. Change-over [5 Marks]
  - ii. Pilot run [5 Marks]

**QUESTION FOUR [20 MARKS]**

- a. Outline FOUR life cycle models [2 marks]
- b. Outline the characteristics waterfall model [2 marks]
- c. Define the term "Prototype" as used in system development [2 marks]
- d. Outline the four advantages of iterative prototyping life cycle model [4 marks]
- e. Explain why OO Methodology is the best method in system analysis and design process [3 marks]
- f. Explain the four basic steps of system design using Object modeling [4 marks]
- g. Explain the following as used in OO methodology under implementation
- i. Functional model [2 marks]
  - ii. Dynamic model [2 marks]

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