



# MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO102/SIT201/SMA 490: SYSTEMS ANALYSIS AND DESIGN

DATE: 26/3/2021

TIME: 8.30-10.30 AM

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INSTRUCTION: Answer Question ONE and any other TWO Question

## QUESTION ONE

- (a) (i) Define the term *system*. (2 marks)
- (a) (ii) Explain **two** characteristics of an open system. (4 marks)
- (b) (i) Explain **two** people skills necessary for a system analyst. (2 marks)
- (b) (ii) Citing an example in each case, distinguish between *natural* and *man-made* systems. (4 marks)
- (c) A hospital has installed an expert system for its operations. Explain **two** benefits of this system. (4 marks)
- (d) (i) Explain the term competitive advantage as used in system analysis and design. (2 marks)
- (d) (ii) A newly established supermarket would like to carry out a feasibility study for a system. Explain **three** types of this study. (6 marks)
- (e) Amani College has engaged you to lead a system development team. Explain **three** general principles of a system that you need to familiarize yourself with. (6 marks)

## QUESTION TWO

- (a) (i) Outline **two** advantages of a decision support system. (2 marks)
- (a) (ii) Distinguish between *telecommuting* and *teleconferencing* as used in system analysis and design. (4 marks)
- (b) A university engaged a system developer for a security system. However, the system

development seems to have failed. Outline **four** symptoms the system could be exhibiting. (4 marks)

- (c) Distinguish between *artificial intelligence* and *robotics*. (4 marks)
- (d) Peter, a system analyst would like to implement a system that he has developed. Explain **three** changeover methods that he could use. (6 marks)

### QUESTION THREE

- (a) Describe **two** system stakeholders in an airline ticketing system. (2 marks)
- (b) A newly established university intends to acquire a student management system. Explain **two** methods it could use to achieve this goal. (4 marks)
- (c)
  - (i) Explain the term system analysis. (2 marks)
  - (ii) Describe **two** development methodologies used in system analysis and design. (4 marks)
- (d)
  - (i) Outline **three** reasons that could lead to the development of a system. (3 marks)
  - (ii) A customer in a restaurant makes an order to a waiter, the waiter books the food from the chef who prepares the food and gives it to the waiter. The waiter serves the customer who eats the food. A cashier bills the customer who pays, gets a receipt and leave the restaurant. Model this scenario using *use case* diagram. (5 marks)

### QUESTION FOUR

- (a) Explain **two** types of data that could be used to test a system. (4 marks)
- (b) A newly developed system has provided for a good output.
  - (i) Outline **two** objectives of an output design. (2 marks)
  - (ii) Describe **three** output modes that could have been incorporated in the system. (6 marks)
- (c) Explain each of the following terms as used in object-oriented systems analysis and design.
  - (i) Relation;
  - (ii) Encapsulation. (4 marks)
- (d) A mobile lending application has 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)

### QUESTION FIVE (20 MARKS)

- (a) Describe **two** types of documentations prepared during system development. (4 marks)
- (b) A bank has advised its customers that online services will not be available due to system maintenance. Explain **three** types of maintenance that the bank could be undertaking. (6 marks)
- (c) Explain **two** methods used to train users of a new system. (4 marks)
- (d) A technical support team has received printer conditions as follows: The printer prints, A red light is flashing and printer is recognized by the computer. The actions include Check the power cable, Check the printer-computer cable, Ensure printer software is installed, Check/replace ink and Check for paper jam. Model this scenario using a decision table. (6 marks)