MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST/SECOND/FOURTH YEAR SPECIAL/SUPPLIMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (MATHEMATICS AND COMPUTER SCIENCE)

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

BACHELOR OF SCIENCE (MATHEMATICS)

SMA402/SIT201/SCO101: SYSTEMS ANALYSIS AND DESIGN

DATE: 21/1/2021 **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 (COMPULSORY) (20 MARKS)

a) (i) Define the term *system analysis*. (2 marks)

(ii) Describe **two** system stakeholders in transport management system. (4 marks)

b) (i) A Student in a university takes one or more units. Using entities unit and student, model each of the following relationships using entity relation diagrams:
I. One to One;
II. One to Many. (2 marks)

(ii) Outline **two** differences between *probabilistic* and *deterministic* systems. (4 marks)

c) A bank clerk uses an interface to serve the bank's customers. Outline **four** interaction styles that he could use. (4 marks)

d) A student used an automated 7tool to develop a user interface. Explain **two** advantages and **two** disadvantages of using such a tool. (8 marks)

e) A student was asked to test a system before implementation. Describe **three** testing methods he could use. (6 marks)

QUESTION TWO (COMPULSORY)

a) (i) Outline **four** components that could be for office automation. (2 marks)
(ii) With the aid of a diagram, describe the components of an expert system. (4 marks)

b) A University decided to acquire a student management information system from a vendor. Explain **two** reasons that could have led to this decision. (4 marks)

c) Distinguish between *decision support systems* and *executive support systems*. (4 marks)

d) A bank used phased changeover method to implement a new customer management system.
   (i) Describe this changeover method. (2 marks)
   (ii) Explain **two** advantages of this method. (4 marks)

QUESTION THREE (20 MARKS)

a) Outline **two** roles of a system analyst in an organization. (2 marks)

b) Explain **two** benefits of carrying out a feasibility study before developing a system. (4 marks)

c) AutoSys, a software development company was hired to develop a system however, the project stalled. Explain **three** possible reasons that could have led to this stalling. (6 marks)

d) (i) Organizations implement systems in order to gain competitive advantage. Outline **two** forces that motivate organizations to seek this advantage. (2 marks)

(ii) A football match is played between two teams A and B. During the first 90 minutes either of the teams could win. If the teams draw then the match goes for extra time and the teams keep on playing.

Create a decision table to model this scenario. (6 marks)

QUESTION FOUR (20 MARKS)

a) Outline **two** pairs of differences between *open* and *closed* systems. (4 marks)

b) (i) Explain each of the following terms as used in Human Computer Interaction.

I. accessibility;

II. acceptance. (4 marks)

(ii) Describe two general principles of a system. (4 marks)

c) Explain each of the following terms as used in object-oriented systems design and analysis.
   (i) Polymorphism;
   (ii) inheritance. (4 marks)

d) A class S*tudent* has two subclasses *Tertiary* and *Basic. Student* has attributes *Regno*., *Name*, *Gender* and *Age. Tertiary* has *Course* and *Specialization*. *Basic* has *School* and *Stream.*

Represent this information in a class diagram. (4 marks)

QUESTION FIVE (20 MARKS)

a) (i) Define the term *documentation* as used in System Analysis and Design. (2 marks)

(ii) Explain **two** documents created when a new system is developed. (4 marks)

b) A company implemented a system that started to experience operation issues. Describe **two** types of maintenance that could be carried out to solve these issues. (4 marks)

c) Describe **two** methods used to train users about 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)