



MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2015/2016 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST SEMESTER EXAMINATION FOR DEGREE IN BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

SIT 204: SYSTEMS ANALYSIS AND DESIGN

Date: 9/8/2016

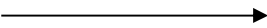
Time: 8:30-10:30

INSTRUCTIONS

This paper consists of FIVE questions

Answer question ONE and other TWO questions in this paper.

1.
 - (a)
 - (i) Define the term *system thinking* as used in Systems Analysis and Design. (2 marks)
 - (ii) Distinguish between *natural* and *artificial* systems citing an example in each case. (4 marks)
 - (b)
 - (i) Using entities Student and Lecturer show each of the following types of relationships between the two entities in entity relation diagrams.
 - I. Many to one
 - II. Many to many. (4 marks)
 - (ii) A newly implemented system is experiencing some issues that require maintenance. Explain **three** types of maintenance that could be carried out on the system. (6 marks)
 - (c)
 - (i) Describe the most appropriate output method for persons with mobility disability. (2 marks)
 - (ii) Many organizations initiate the development of a computer system. However, some of them do not materialize. Explain **three** factors that could lead to this. (6 marks)
 - (d) A university student is required to register for units at the beginning of a semester. For him to register for the units he is expected to have cleared or paid at least three quarters of the

- semester fees. Model this scenario using a decision tree. (6 marks)
2. (a) (i) What is a feasibility study? (2 marks)
- (ii) Describe **two** types of *feasibility study*. (4 marks)
- (b) Explain **three** change over methods that may be used when implementing a new system. (6 marks)
- (c) A patient visits a hospital and a clerk records his details. The patient is then directed to a nurse for preliminary checks after which he is send to a doctor. The doctor examines the patient and may send him to the laboratory technologist for further tests if need be. The doctor then prescribes drugs which the patient picks.
- Model this scenario using *use case* diagram. Use extends where appropriate. (8 marks)
3. (a) Outline **three** types of user interfaces that may be included in a new system. (3 marks)
- (b) (i) Explain **two** disadvantages of using standard packages as a system. (4 marks)
- (ii) The management of a certain company has approached you to advise them on system acquisition. Explain **three** acquisition method you could highlight in your advice. (6 marks)
- (c) Create a decision table for trouble shooting a printer. (7 marks)
4. (a) (i) Explain each of the following terms as used in Human Computer Interactions.
I. Accessibility;
II. Acceptance. (4 marks)
- (ii) Distinguish between *service bureau* and *time-sharing vendor* as used in System Analysis and Design. (4 marks)
- (b) A university admits two types of students into its programs, government sponsored and self-sponsored. The university requires Ksh. 200,000 and Ksh. 300,000 to train government sponsored and self-sponsored student respectively. A government sponsored student pays Ksh. 150,000 while a self-sponsored student pays Ksh. 200,000 per year.
- Using a decision tree, advice the university on the type of student to admit. (6 marks)
- (c) Amani used the following objects to represent various relationships during system design.
- (i) 
- (ii) 
- Name the type of relationship represented by each object. (2 marks)
- (d) A class *Student* has two subclasses, *GSSP* and *SSP*. Student has attributes *regno.*, *name*, *sex* and *course*. *GSSP* has attributes *region*, *status* and *grade*. *SSP* has attributes *mature* and *feebal*.

Represent this information in a class diagram.

(4 marks)

5. (a) (i) Outline **two** criteria for defining system requirements. (2 marks)
- (ii) Explain **two** types of testing that could be carried out on a system. (4 marks)
- (b) Distinguish between *Joint Requirements Planning* and *Brainstorming* as used in System Analysis and Design. (4 marks)
- (c) John implemented a system by pilot method. Explain **two** advantages he would accrue from this move. (4 marks)
- (d) A supermarket uses the model.
- Customer orders for goods
 - Clerk checks availability of ordered goods and informs the customer.
 - If available the customer pays for the goods.
 - Cashier issues a receipt to the customer
 - Stores clerk packs the goods
 - Customer picks the goods and leaves.
 - If not available customer is advised to come later.

Create a data flow diagram for this model of transaction.

(6 marks)