



# **MACHAKOS UNIVERSITY**

**University Examinations for 2019/2020 Academic Year**

**SCHOOL OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY**

**FOURTH YEAR SECOND SEMESTER EXAMINATION FOR**

**BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)**

**BACHELOR OF SCIENCE (COMPUTER SCIENCE)**

**SCO 421/SIT 408: DECISION SUPPORT SYSTEMS**

**DATE: 23/10/2020**

**TIME: 2.00-4.00 PM**

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## **INSTRUCTIONS**

**Answer question ONE and any other TWO questions.**

### **QUESTION ONE (COMPULSORY, 30 MARKS)**

- a) What do the following Abbreviations stand for?
  - i. DSS (1 mark)
  - ii. ERP (1 mark)
  - iii. OLAP (1 mark)
- b) Define the following terms
  - i. Prototype (2 marks)
  - ii. Business Intelligence (2 marks)
  - iii. Business Analytics (2 marks)
  - iv. Expert system (2 marks)
- c) Briefly describe any TWO types of Transaction Processing Systems (4 marks)
- d) In decision making, what do you understand by the following?
  - i. Scenario (2 marks)
  - ii. sensitivity analysis (2 marks)
  - iii. heuristics (2 marks)

- iv. what if analysis (2 marks)
- v. Distinguish between Knowledge and Information (3 marks)
- vi. List down the tools used in data mining (4 marks)

### **QUESTION TWO (20 MARKS)**

- a) Describe the components of a Linear Programming problem (10 marks)
- b) A store has requested a manufacturer to produce pants and sports jackets. For materials, the manufacturer has 750 m<sup>2</sup> of cotton textile and 1,000 m<sup>2</sup> of polyester. Every pair of pants (1 unit) needs 1 m<sup>2</sup> of cotton and 2 m<sup>2</sup> of polyester. Every jacket needs 1.5 m<sup>2</sup> of cotton and 1 m<sup>2</sup> of polyester. The price of the pants is fixed at 40 and that of sports jacket at 40. What is the number of pants and jackets that the manufacturer must give to the stores so that these items obtain a maximum sale? (10 marks)

### **QUESTION THREE (20 MARKS)**

- a) What is a model? (1 mark)
- b) What are the benefits of using models in decision making? (5 marks)
- c) Use a diagram to describe the components of a Decision Support System(DSS) (8 marks)
- d) In order for a user to be redirected to a homepage, he(she) must provide the correct Username and Password otherwise, an error message will be displayed. In addition, the user must have been registered in a domain. Use a Decision Table to analyse this problem (6 marks)

### **QUESTION FOUR (20 MARKS)**

- a) Describe the ID3 Algorithm (6 marks)
- b) Using a diagram briefly explain the general structure of a mathematical model used for decision making (8 marks)
- c) What are the advantages and disadvantages of using simulations in decision making? (6 marks)

### **QUESTION FIVE (20 MARKS)**

- a) What are the advantages and disadvantages of Prototyping in Decision Support Systems? (8 marks)
- b) Discuss the components of knowledge management system (6 marks)
- c) Describe Knowledge Management System Cycle (6 marks)