



MACHAKOS UNIVERSITY

University Examinations for 2022/2023

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

**THIRD YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR
BACHELOR SCIENCE (INFORMATION TECHNOLOGY)**

SIT385: SYSTEMS ADMINISTRATION

DATE:28/7/2023

TIME:8.30-10.30 A.M

INSTRUCTIONS: Answer Question ONE and other TWO Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Define systems administration in view of large technology centric organization (3 marks)
- b) Highlight five roles of a systems administrator (5 marks)
- c) Analyze four skills that a systems administrator must possess and state importance of each skill (8 marks)
- d) Differentiate between managed and unmanaged servers stating the circumstance within which you will recommend either of them. (4 marks)
- e) Discuss five aspects which must be managed in a server room. (10 marks)

QUESTION TWO (20 MARKS)

- a) Define cloud computing (1 mark)
- b) Differentiate the following
 - i. Grid computing and distributed computing (4 marks)
 - ii. Utility computing and service oriented architecture (4 marks)
- c) Analyze two cloud computing models detailing the specific components for each type of model (8 marks)
- d) Highlight three characteristics of cloud computing (3 marks)

QUESTION THREE (20 MARKS)

- a) Define configuration management (2 marks)
- b) Highlight five devices which require configuration (5 marks)
- c) Analyze five benefits of configuration management (5 marks)
- d) Illustrate the exemplary configuration management framework pillars (8 marks)

QUESTION FOUR (20 MARKS)

- a) Define a data backup (1 mark)
- b) Simulate three scenarios of data back up you can apply as a systems administrator to achieve maximum availability of an ERP system for an organization (9 marks)
- c) Redundant Array of Independent Disks (RAID) is created to ensure high availability. Illustrate how the following is achieved
 - i. RAID 1 (2 marks)
 - ii. RAID 3 (2 marks)
 - iii. RAID 5 (2 marks)
- d) You have been employed as a systems administrator in a fintech multinational company. Demonstrate the business continuity plan (BCP) strategy you would employ for the company. (4mks)

QUESTION FIVE (20 MARKS)

- a) Define virtualization (1 marks)
- b) Analyze three types of hardware virtualization (9 marks)
- c) Discuss how a brokered cloud storage access operates. (6 marks)
- d) Highlight four cloud computing operations (6 marks)