



# **MACHAKOS UNIVERSITY**

**University Examinations for 2022/2023**

**SCHOOL OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY**

**THIRD YEAR FIRST SEMESTER EXAMINATION FOR**

**BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)**

**SIT 394: EMERGING TECHNOLOGIES EXAM**

**DATE:**

**TIME:**

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## **INSTRUCTIONS**

This Paper consists of FIVE questions

Answer question ONE and any other TWO questions in this paper

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

- a) Explain the term emerging technologies as used in computing (2 marks)
- b) State Five key attributes that qualify a technology as emerging (5 marks)
- c) Advances in computing and Artificial intelligence technologies have always had a direct influence in social and economic life. Explain any Five uses of such technologies in real life situations. (5 marks)
- d) Internet of Things(IoT) technologies are helping users to achieve deeper automation, analysis, and integration within a system due to its features. Discuss these features. (6 marks)
- e) Edge computing architecture can be explained in four layers.
  - i. Draw appropriate diagram to illustrate the architecture of edge computing. (6 marks)
  - ii. Describe any three applications of edge computing (6 marks)

## QUESTION TWO (20 MARKS)

- a) Cyber Security assumes a critical role in the area of data technology. Explain main trends promoting cyber security (5 marks)
- b) As IT expert on cyber security, you are required to advise your organization on developing appropriate response plans that minimize the damage in the event of a cyber attack.
- i. Discuss CIA triad (6 marks)
  - ii. Explain any Five techniques the organization would use to improve on cyber security (5 marks)
- c) State any Four benefits of IoT (4 marks)

## QUESTION THREE (20 MARKS)

- a) Robotic Process Automation (RPA) in driving success in business environment. As IT expert in your organization, explain how the organization will benefit by employing RPA technologies in promoting the growth of the business. (6 marks)
- b) Big data and the cloud are technological components influencing AI.
- i. Describe any Three properties of big data presented by 5Vs. (6 marks)
  - ii. Identify and discuss services offered by the cloud technology (8 marks)

## QUESTION FOUR (20 MARKS)

- a) “Blockchain technology is the basis of crypto currency”, Justify the statement. (3 marks)
- b) i) Define double spending attack . (2 marks)
- ii) Explain how blockchain solve the double spending problem. (5 marks)
- c) How does asymmetric key ensure confidentiality and authentication in blockchain technology (5 marks)
- d) Briefly describe different layers of blockchain technology (5 marks)

## QUESTION FIVE (20 MARKS)

- a) State Five features of 5G technology. (5 marks)
- b) Discuss three applications of quantum computing technology (6 marks)
- c) Differentiate between Virtual reality and Augmented reality (4 marks)
- d) Explain any Five Limitations associated with Virtual reality and Augmented reality devices (5 marks).