



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (MATHEMATICS AND COMPUTER SCIENCE)

SCO 100: FUNDAMENTALS OF COMPUTING

DATE: 26/2/2021

TIME: 2.00-4.00 PM

INSTRUCTIONS

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

QUESTION ONE (30 MARKS)

- a) Define the following terms as used in computing. (4 marks)
 - i. Computer
 - ii. Computer System
 - iii. Data
 - iv. Information
- b) Explain any **THREE** Security services in computer security. (6 marks)
- c) Using a diagram explain giving relevant examples the **TWO** main categories of computer software and their areas of application. (8 marks)
- d) Using a diagram outline the process of interaction between the CPU and the Memory Unit during data processing. (4 marks)
- e) Convert:
 - i. 24.36 from base 8 to base 10 and (2 marks)
 - ii. 4D.21 from base 16 to base 10 (2 marks)
- f) Discuss any **two** internal components of a computer. (4 marks)

QUESTION TWO (20 MARKS)

- a) In the contemporary society, computers have become a 'necessity', helping human to perform most of the tasks efficiently. Using relevant examples, discuss five areas of computer application in the society. (10 marks)
- b) In the definition to computers, data processing is required in order to provide meaningful results (information). The Central Processing Unit (CPU) performs this task. Using a diagram briefly explain the functions of each component of the CPU. (6 marks)
- c) List **FOUR** careers that one can pursue in Computing. (4 marks)

QUESTION THREE (20 MARKS)

- a) Define the term software. (2 marks)
- b) Draw a diagram and briefly explain classification of computers and their areas of application (8 marks)
- c) Discuss in details **FIVE** services of the internet. (10 marks)

QUESTION FOUR (20 MARKS)

- a) Convert 147_{10} into its equivalent Base 2, 8 and 16. (6 marks)
- b) Convert 0.865 from Base 10 to base 2, 8 and 16. (6 marks)
- c) Upon breaking for holidays, you find your Uncle in a dilemma of purchasing a Personal Computer (PC). Knowing that you are a computer science student, he approaches you for advice concerning the purchase of the computer. Take this opportunity to give him informed advice on factors to consider when buying a PC. (8 marks)

QUESTION FIVE (20 MARKS)

- a) Using a well labeled diagram discuss the memory hierarchy and give relevant examples of the **TWO** types of computer memory. (6 marks)
- b) Give **TWO** access types of storage devices and relevant storage media examples. (4 marks)
- c) Briefly explain **THREE** advantages and disadvantages of computers compared to human beings. (6 marks)
- d) Give **TWO** input and **TWO** output devices used in computers. Explain briefly. (8 marks)