



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF INFORMATICS AND INNOVATION SYSTEMS**  
**UNIVERSITY EXAMINATION FOR THE BACHELOR OF SCIENCE DEGREE**  
**1<sup>ST</sup> YEAR 1<sup>ST</sup> SEMESTER 2013/2014 ACADEMIC YEAR**  
**REGULAR**

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**COURSE CODE: SCS 3111**

**COURSE TITLE: COMPUTER ORGANIZATION AND APPLICATION**

**EXAM VENUE: LR 20**

**STREAM: (ALL 1<sup>ST</sup> YEARS)**

**DATE: 22/04/14**

**EXAM SESSION: 9.00 – 11.00 AM**

**TIME: 2.00 HOURS**

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**Instructions:**

- 1. Answer question 1 (Compulsory) and ANY other 2 questions**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

### **Questionone (30 marks)**

- a) Define a computer. (2 marks)
- b) Give the three types of computer software and briefly discuss them. (3 marks)
- c) Discuss the following programming concepts:
  - i. Statement
  - ii. Variables
  - iii. Logic
  - iv. Conditionals (4 marks)
- d) Give four examples of application software. (2 marks)
- e) Name the two parts of the central processing unit (CPU). What is the function of each. (2 marks)
- f) Differentiate between primary storage and secondary storage of a computer system. (2 marks)
- g) What are the three Internet challenges to privacy? (3 marks)
- h) Convert  $290_{10}$  to the following number systems and show the steps.
  - i. Binary. (2 marks)
  - ii. Octal. (2 marks)
  - iii. Hexadecimal. (2 marks)
- i) Give three main alphanumeric representations that are used in computers. (3 marks)
- j) Name the three areas computer security is concerned with. (3 marks)

### **Question 2 (20 marks)**

- a) Using a diagram, describe the basic operations of a computer system. (8 marks)
- b) Express  $8956_{10}$  in Binary Coded Decimal (BCD) format. (2 marks)
- c) Differentiate between batch processing and time sharing basis of a computer system. (4 marks)
- d) Briefly discuss about low-level and high-level programming languages. (6 marks)

### **Question 3 (20marks)**

- a) Briefly describe the components of a computer system. (5 marks)
- b) Give the five moral dimensions. (5 marks)
- c) Give 5 advantages of using a computer. (5 marks)
- d) Define computer security. (2 marks)
- e) Briefly discuss the three basic types of system software. (3 marks)

#### **Question 4 (20marks)**

- a) Convert the following to the relevant number system. Show your working.
- i)  $532_{16}$  to binary. (2 marks)
  - ii)  $101101_2$  to decimal. (2 marks)
  - iii)  $3490_{10}$  to hexadecimal (2 marks)
- b) Briefly discuss the ethical principles with deep roots in many cultures that have survived throughout recorded history. (6 marks)
- c) What are the reasons that the use of High Level Languages (HLL) is preferred over the use of Low Level Languages(LLL) in programming? (4 marks)
- d) Briefly discuss about the following software threats:
- i) Virus (1 mark)
  - ii) Worm (1 mark)
  - iii) Trojan Horse (1 mark)
  - iv) Zombie (1mark)

#### **Question 5 (20marks)**

- a) Name three tools that are used in programming software. (3 marks)
- b) Briefly discuss the five Fair Information Practices that are the basis of privacy. (5 marks)
- c) State the 4 As of achieving security and describe them (6 marks)
- d) Perform the following complement changes:
- i)  $(r-1)$ 's complement of N
    - $N = 76592_{10}$  (1 mark)
    - $N = 100111_2$  (1 mark)
  - ii)  $r$ 's complement of N
    - $N = 45092_{10}$  (1 mark)
    - $N = 110101_2$  (1 mark)
- e) What are the two types of computers? (2 marks)