

**W1-2-60-1-6**

## JOMO KENYATTA UNIVERSITY

**OF**

**AGRICULTURE AND TECHNOLOGY**

# University Examinations 2014/2015

**FOURTH YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

**ICS 2403 : DISTRIBUTED SYSTEMS**

**DATE: APRIL 2015 TIME: 2 HOURS**

**INSTRUCTIONS: ANSWER QUESTION ONE (COMPULSORY) AND**

**ANY OTHER TWO QUESTIONS.**

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**QUESTION ONE (30 MARKS)**

(a) Explain any five desired attributes of a distributed system.

[10 marks]

(b) Describe the client/server software architecture of a distributed system clearly showing the different implementation forms it can take. [10 marks]

(c) Discuss the criteria you would use to evaluate the dependability of a distributed system. [10 marks]

**QUESTION TWO (20 MARKS)**

(a) Explain five causes of hardware and software failure in distributed systems. [10 marks]

(b) Distinguish backward error recovery from forward error recovery clearly highlighting three disadvantages of the former. [10 marks]

**QUESTION THREE (20 MARKS)**

(a) What is a security threat? Describe four main types of security threats to a distributed system. [10 marks]

(b) Explain five reasons why one would prefer a distributed system over a centralized system. [10 marks]

**QUESTION FOUR (20 MARKS)**

(a) Explain five different kinds of names used to describe entities in a distributed system. [10 marks]

(b) Identify any three properties of a flexible distributed system.

[8 marks]

(c) Enumerate two types of faults. [2 marks]

**QUESTION FIVE (20 MARKS)**

(a) Describe four ways of dealing with the basic problems and challenges encountered during the design and use of distributed system. [8 marks]

(b) Identify five forms of attack on a communication channel and any two preventive measures that can be adopted to counter the same.

[12 marks]