



TECHNICAL UNIVERSITY OF MOMBASA

INSTITUTE OF COMPUTING AND INFORMATICS
DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR:

BSIT14SY4S1 BTITY3S2

ICS 2403/EIT 4312: DISTRIBUTED SYSTEMS

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

DATE: Sep 2018

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

- i. Define the following terms:
 - a. System (2 Marks)
 - b. Packet (2 Marks)
 - c. Process (2 Marks)
 - d. Message (2 Marks)
 - e. Distributed System (2 Marks)
- ii. Advantages of Distributed Systems over Independent Personal Computers . (6 Marks)
- iii. What is the purpose of creating distributed systems? (2 Marks)
- iv. Discuss the basic components that makeup a distributed computer network. (5 Marks)
- v. Discuss implications of the security factor in centralized and distributed systems. (5 Marks)
- vi. In which situation can a client act as a server? (2 Marks)

Question TWO

- i. Explain the FOUR disadvantages of Distributed Systems (4 Marks)
- ii. List the Processes where a DCS might be used include. (4 Marks)
- iii. Discuss meaning of the following terminologies in distributed systems.
 - a. Distributed mutual exclusion. (2 Marks)
 - b. Remote Method Invocation (2 Marks)
 - c. Remote procedure calls (2 Marks)
- iv. How is CORBA achieved? Cite the benefits that accrue from its development. (6 Marks)

Question THREE

- i. What are some examples of computational modeling and how can it be used to study complex systems? (4 Marks)
- ii. Explain the meaning of a distributed control system. (2 Marks)
- iii. Name the different types of servers found in a distributed system. (4 Marks)
- iv. Discuss THREE different types of failures in a distributed system. (6 Marks)
- v. What is communication complexity and state its importance. (4 Marks)

Question FOUR

- i. Using examples of distributed systems explain how they can be applied in electoral bodies of a nation to manage the voting process. (6 Marks)
- ii. In distributed systems, integrity of applications is maintained by synchronous computations.
 - a. What are these computations? (2 Marks)
 - b. How are they implemented? (4 Marks)
- iii. How can computational modeling improve medical care and/or biomedical research? (4 Marks)
- iv. What are deadlocks in a distributed system? (2 Marks)
- v. How can they be avoided and handled when they arise? (2 Marks)

Question FIVE

- i. Describe in detail the goals of distributed systems (6 Marks)
- ii. Illustrate your understanding of data parallel computations. (5 Marks)
- iii. Discuss the various Distributed Computing System Models (4 Marks)
- i. Highlight the FIVE Characteristics of a reliable distributed system. (5 Marks)