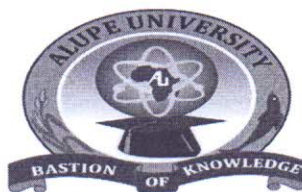


COM 409



ALUPE UNIVERSITY

OFFICE OF THE DEPUTY VICE CHANCELLOR

ACADEMICS, RESEARCH AND STUDENTS AFFAIRS

UNIVERSITY EXAMINATIONS

2022/2023 ACADEMIC YEAR

**SECOND YEAR FIRST SEMESTER REGULAR MAIN
EXAMINATION**

**FOR THE DEGREE OF BACHELOR COMPUTER
SCIENCE**

COURSE CODE: COM 409

COURSE TITLE: Distributed System

DATE: 20TH DECEMBER 2022

TIME: 9-12PM

INSTRUCTION TO CANDIDATES

- **SEE INSIDE**

THIS PAPER CONSISTS OF 3 PRINTED PAGES

PLEASE TURN OVER

COM 409: Distributed System**STREAM: BSc (Computer Science****DURATION: 3 Hours****INSTRUCTIONS TO CANDIDATES**

- i. Answer Question **ONE** and any other **THREE** questions
- ii. Do not write on the question paper

Question #1 [24 Marks]

- a) Explain the four implications for real-time applications of implementing distributed systems [4 Marks]
- b) What is RPC and using an example of your choice explain how it works [4 Marks]
- c) Using the example in c) above, explain two advantages and two disadvantages of RPC [4 Marks]
- d) Message Oriented communication can be viewed along two axes. Explain [2 Marks]
- e) Name and explain the three properties of a true identifier used to uniquely identify an entity [6 Marks]
- f) Discuss the goal of mutual exclusion in distributed systems [2 Marks]
- g) What is Lamports Logical clocks and what is their contribution [2 Marks]

Question #2 [12 Marks]

- a) In distributed systems, many of the algorithms that have been used are typically not completely symmetrical, and some process has to take the lead in initiating the algorithm. Explain these process [2 Marks]
- b) Discuss the peer 2 peer motivations [10 Marks]

Question #3[12 Marks]

- a) Explain the eight fallacies of distributed systems [8 Marks]
- b) Define CORBA and stated its function in distributed systems [4 Marks]

Question #4[12 Marks]

- a) Explain at least four common stream oriented communication characteristics [4 Marks]
- b) Differentiate between flat transaction and nested transaction [4 Marks]
- c) Explain the RPC message procedure [4 Marks]

Question #5[12 Marks]

- a) The name of an access point is an address, give two examples [2 Marks]
- b) Discuss the benefits and problems of CORBA as used in distributed systems [10 Marks]

Question six [12 Marks]

- a) With an example explain the statement “Distributed computing environments are heterogeneous ” [4 Marks]
- b) What is the function of election algorithms in distributed systems? [2 Marks]
- c) Explain the three types of RPC Remote Procedure Call [6 Marks]

Question Seven [12 Marks]

- a) Explain the six functions of a middleware as used in distributed systems [6 Marks]
- b) What is an Entity in Distributed systems [2 Marks]
- c) Explain
 - i) Explain the Ring Algorithm [2 Marks]
 - ii) Explain the Bully Algorithm as used in Distributed systems [2 Marks]