



**KISII UNIVERSITY**  
**UNIVERSITY EXAMINATIONS**

**FOURTH YEAR EXAMINATION FOR THE AWARD OF THE**  
**DEGREE OF BACHELLOR OF BUSINESS INFORMATION AND**  
**MANAGEMENT**

**FIRST SEMESTER 2023/2024**

**[AUGUST-DECEMBER, 2023]**

**BINM 426: DISTRIBUTED SYSTEMS**

**STREAM: Y4 S1**

**TIME: 2 HOURS**

**DAY: FRIDAY, 3.00 – 5.00 P.M.**

**DATE: 24/11/2023**

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**INSTRUCTIONS**

- 1. Do not write anything on this question paper.***
- 2. Answer Questions ONE and any other THREE Questions***

**QUESTION 1: COMPULSORY [25 Marks]**

- Briefly describe the term Inter process communication in Distributed Systems. (3 Marks)
- List and discuss any TWO reasons why you would design a system as a distributed system (4 Marks)
- State and explain any TWO goals of a distributed system. (4 Marks)
- Explain the term middleware and briefly discuss any of its TWO primary roles (4 Marks)
- List and discuss any two types of Transparency in a Distributed System (4 Marks)
- State and briefly discuss any TWO sorts/Classess of Distributed systems (4 Marks)
- Write RMI and RPC abbreviation in full. (2 Marks)

**QUESTION 2: (15 MARKS)**

- Differentiate centralized vs Distributed systems (4 Marks)
- Briefly describe the following terms
  - Concurrency (2 Marks)

- ii. No global clock (2 Marks)
- c) Explain any THREE types of security threats on distributed systems. (6Marks)
- d) In relation to networks, briefly explain the term network protocol (1 Mark)

**QUESTION 3 : (15 MARKS)**

- a) Explain the term client server communication. (3 Marks)
- b) List and describe any TWO characteristics of inter process communication. (4 Marks)
- c) In relation to interprocess communication in distributed systems briefly explain the terms below
  - i. Pipes (2 Marks)
  - ii. FIFO (2 Marks)
- d) State and briefly discuss any two types of groups in group communication (4 marks)

**Question 4: 15 MARKS**

- a) List and describe any TWO types of systems models. (4 Marks)
- b) Differentiate Client server and Peer to peer architecture (2 Marks)
- c) Explain the term group communication and discuss briefly any two types of group communication (5 Marks)
- d) Discuss any TWO categories of failure under the failure model.

(4Marks)

**QUESTION 5 : (15 MARKS)**

- a) Explain the following terms
  - i. Sockets (2 Marks)

- ii. Request reply protocol (2 Marks)
- a) List and describe any TWO impacts of Internet on businesses. (4Marks)
- b) Write in full the term EDI and highlight any TWO benefits of EDI (4Marks)
- c) State any THREE characteristics of interprocess communication (3Marks)