

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**SECOND YEAR EXAMINATION FOR THE AWARD OF DIPLOMA IN**

**COMPUTER SCIENCE**

**COMP 0262: DISTRIBUTED SYSTEMS**

**STREAMS:**

**TIME: 2 HOURS**

**DAY/DATE: THURSDAY 7/12/2017**

**2.30 P.M – 4.30 P.M**

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**INSTRUCTIONS:**

- **Answer question one and any other two from section B**
- **Do not write on this paper**

**SECTION A {compulsory}**

**QUESTION ONE (30MKS).**

- Differentiate between centralized approach and fully distributed approach. (4marks).
- Identify and discuss four (4) conditions that must hold simultaneously for there to be a deadlock. (8marks).
- Discuss any three network protocols (3marks).
- Define the term Operating System (1mark).
- Define each of the following terms (4Marks)
  - Distributed System
  - Middleware
- State any two distributed election algorithms known to you. (2marks).
- Explain each of the following types of middleware communication (6 Marks)
  - RPC
  - RMI
- State any two challenges in designing a distributed application (2marks).

**QUESTION TWO (20MKS).**

- a) Client server model is a concept for describing communications between computing processes that are classified as service consumers(clients) and service providers(servers).  
Discuss three features exhibited by these models (6marks).
- b) Discuss three advantages and disadvantages of distributed systems over centralized ones. (6marks).
- c) Discuss any distributed system algorithm (3marks).
- d) What is clock synchronization? (1mark)
- e) What are client and server stubs? Describe how they are used in Remote Procedure Calls (4 Marks).

**QUESTION THREE (20MKS).**

- a) Discuss any four distributed computing models . (8marks).
- b) What is a computer Network? With the use of relevant examples, discuss the **THREE** types of network topologies. (7marks).
- c) With the aid of a diagram, show and explain the role of middleware in distributed systems . (5 marks).

**QUESTION FOUR (20MKS).**

- a) Outline sequence of events during a RPC . (5marks).
- b) Discuss any three functions of the operating systems . (6marks).
- c) Discuss main characteristics on Distributed Operating System (5 marks)
- d) Compare process and thread (4marks).

**QUESTION FIVE (20MKS).**

- a) Define the term transparency. (1mark)
  - b) State and explain five forms of transparency found in distributed systems. (10marks)
  - c) Discuss any five characteristics of a distributed system. (5 marks).
  - d) What is the **MAIN** disadvantage of RPC and RMI. (4 Marks)
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