

THARAKA



UNIVERSITY

COLLEGE

(A Constituent College of Chuka University)

UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE

COSC 0262: DISTRIBUTED SYSTEMS

STREAMS: DIP (COMP SCI)

TIME: 2 HOURS

DAY/DATE: MONDAY 06/04/2020

11.30 AM – 1.30 PM

INSTRUCTIONS:

- Answer question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, No reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.
- Marks are awarded for clear and concise answers.

SECTION A

QUESTION ONE (30MKS)

- a. Define the following terms in distributed systems (6mks)
 - i. Distributed system
 - ii. Distributed file system
 - iii. File replication
- b. Define the term middleware and state any three services provided by middleware (4mks)
- c. Building dependable systems closely relates to controlling faults. Give a classification of faults that call for attention in a distributed system (6mks)

- d. Dependability is a term that covers a number of useful requirements for distributed systems. State FOUR such requirements. (4mks)
- e. Differentiate between message oriented protocols and stream oriented protocols (4mks)
- f. State and explain any three problems facing designers of distributed systems (6mks)

SECTION B (Answer any two questions from this section)

QUESTION TWO (20MKS)

- a. Explain three main characteristics that differentiate a distributed system from a centralized system (6mks)
- b. Give FOUR reasons that would make a corporate organization shift from Centralized systems to Distributed systems (4mks)
- c. In a tabular form, highlight the key differences between a tightly coupled system and a loosely coupled system (10mks)

QUESTION THREE (20MKS)

- a. Basing yourself on system architecture, classify distributed systems (4mks)
- b. State any four design requirements of a distributed system (4mks)
- c. List any four examples of systems that would be said to work under distributed environment (4mks)
- d. State and explain FOUR advantages of distributed processing (8mks)

QUESTION FOUR (20MKS)

- a. The RPC model has been basically used to demonstrate how messages may be passed between two or more remotely connected computers. With the help of a diagram, describe briefly what takes place between the two machines during this process (10mks)
- b. Define computer network. Computers are generally networked together using different network topologies. With an aid of a diagram, explain any FOUR types of network topologies (10mks)

QUESTION FIVE (20MKS)

- a. State any four types of failures possible in a distributed computing environment (4mks)

- b. Explain any three types of security concerns that an ICT managers in large distributed organizations may deal with in the course of duty (6mks)
 - c. Define the term transparency. State and explain any four forms of transparency found in distributed systems (10mks)
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