COLLEGE
(A Constituent College of Chuka University)

UNIVERSITY EXAMINATIONS

SECOND YEAR SECOND SEMESTER EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE

COSC 0262: DISTRIBUTED SYSTEMS

STREAMS: DIP. COMPSCI   **TIME: 2 HOURS**

DAY/DATE: APRIL 2020

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 the 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 requirement 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)