DIPLOMA IN COMPUTER SCIENCE

COSC 0262: DISTRIBUTED SYSTEMS

DAY/DATE:……………………   ……………………….

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 (Answer ALL questions)
QUESTION ONE (30 Marks)
a) Define the following terms:
   - i.   Transparency   (2 marks)
   - ii. Concurrency   (2 marks)
   - iii. Process   (2 marks)
   - iv. Distributed system (2 marks)
   - v.   Socket   (2 marks)
b) List TWO advantages and TWO disadvantages of sharing resources in a distribute system (4 marks)
c) Differentiate between data-centered architecture and event-based architecture.   (4 marks)
d) What are Client and Server Stubs and how are they used in remote procedure calls? (4 marks)
e) While stating what they stand for, distinguish between TCP and UDP   (4 marks)
f) State 2 characteristics of distributed systems   (4 marks)

QUESTION TWO (20 Marks)

  a) Using a diagram, explain the following architectural styles:
    i. Object-oriented architecture (5 marks)
    ii. Layered architecture (5 marks)
  b) Explain THREE advantages of threads in non-distributed system (6 marks)
  c) Differentiate between administrative and geographical scalability? (4 marks)

QUESTION THREE (20 Marks)

  a) Using a diagram, describe the client-server model. (8 marks)
  b) Discuss the following layered architectural styles:-
    i. The user-interface level (3 marks)
    ii. The processing level (3 marks)
    iii. The data level (3 marks)

  c) Explain three advantages of file replication. (3 marks)

QUESTION FOUR [20 Marks]

  a) Discuss FOUR goals of a distributed system. (8 marks)
  b) With an aid of a diagram, define the term middleware (6 marks)
  c) Explain THREE advantages of distributed systems (6 marks)

QUESTION FIVE [20 Marks]

  a) Discuss FIVE types of distribution transparency. (10 Marks)
  b) Remote Procedure Call (RPC) is a protocol that allows programs to call procedures located on other machines. Outline the steps in which a remote procedure call occurs (10 marks)