KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS
YEAR FOUR SEMESTER ONE EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF COMPUTER SCIENCE

COURSE CODE: CSC 410

COURSE TITLE: DISTRIBUTED SYSTEMS

DATE: 14 / 06 /2021   TIME: 9.00 A.M – 11.00 A.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE AND ANY OTHER TWO (2) QUESTIONS

QUESTION ONE [COMPULSORY] [30 MARKS]

a) Explain the four implications for real-time applications of implementing Distributed systems.

[4 Marks]

b) An experimental file server is up 3/4 of the time and down 1/4 of the time, due to bugs. How many times does this file server have to be replicated to give an availability of at least 99%?

[4 Marks]

c) How does RPC work (remote procedure call)? [4 Marks]

d) Give two advantages and two disadvantages of Remote procedure call [4 Marks]

e) Message Oriented Communication can be viewed along two axes Explain [2 Marks]

f) What is a Name in Distributed Systems? [2 Marks]

g) Name and explain the three properties of a true identifier used to uniquely identify an entity

[6 Marks]

h) Discuss the goal of mutual exclusion in distributed systems [2 Marks]

i) What is the important contribution of Lamport's Logical Clocks? [2 Marks]

QUESTION TWO [20 MARKS]

a) Distributed computing environments are heterogeneous Explain [5 Marks]

b) What is the function of Election algorithms in distributed systems? [2 Marks]

c) In distributed systems, many of the algorithms that have been used are typically not completely

symmetrical, and some process has to take the lead in initiating the algorithm explain these

processes [4 Marks]

d) Discuss the Peer 2 Peer Motivations   [9 Marks]

QUESTION THREE [20 MARKS]

a) Define Stream oriented communication as used in Distributed systems   [2 Marks]

b) Explain the Eight Fallacies of distributed systems   [10 Marks]

c) Define **CORBA** as used in Distributed systems   [3 Marks]

d) Explain the five types of RPC Remote Procedure Call   [5 Marks]

QUESTION FOUR [20 MARKS]

a) Explain at least FOUR common stream oriented communication characteristics [4 Marks]

b) Differentiate between Flat transaction and Nested transactions   [4 Marks]

c) Explain the six functions of a middleware as used in Distributed systems [6 Marks]

d) Explain the RPC message procedure   [4 Marks]

e) What is an Entity in Distributed systems?   [2 Marks]

QUESTION FIVE [20 MARKS]

a) The name of an access point is an address, give two examples   [2 Marks]

b) Discuss the benefits and problems of **CORBA** as used in distributed systems

                                                                           [10 Marks]

c) Explain the common perception of **PEER** to **PEER** networks   [4 Marks]

d) Explain the Ring Algorithm   [2 Marks]

e) Explain the Bully Algorithm as used in Distributed systems   [2 Marks]