(*Knowledge for Development*)

# KIBABII UNIVERSITY

## UNIVERSITY EXAMINATIONS
## 2022/2023 ACADEMIC YEAR

## END OF SEMESTER EXAMINATIONS
## YEAR ONE SEMESTER TWO EXAMINATIONS

## FOR THE DEGREE OF
## BACHELOR OF SCIENCE COMPUTER SCIENCE

**COURSE CODE : CSC370E**

**COURSE TITLE : NETWORK PROGRAMMING**

**DATE:** 14/12/2022 **TIME:** 9:00 A.M – 11:00 P.M

**INSTRUCTIONS TO CANDIDATES**

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

## QUESTION ONE (COMPULSORY) [30 MARKS]

a. Define the following terms:

   **i.** Protocol [2 marks]

   **ii.** Daemon [2 marks]

   **iii.** Socket [2 marks]

b. Differentiate between RIP, IGRP and IS-IS routing protocols. [6 marks]

c. Explain any five characteristics of TCP protocol. [5 marks]

d. Correct the following Socket Java Program. [5 marks]

```
try {
Socket socket = new Socket(host, port);
 BufferedReader in = new BufferedReader(
   new InputStreamReader(
 socket.getInputStream();
PrintWriter out = new PrintWriter(
   new OutputStreamWriter(
   socket.getOutputStream();
  «Send and receive data»
   in.close()
 out.close()
 socket.close()
 } catch (IOException e) {
    «Handle exception»
 }
```

   i. Differentiate between a server socket and a server port. [2 marks]

   ii. What do you understand by passing of arguments in RMI. [2 marks]

   iii. Explain the function of a protocol analyzer. [4 marks]

## QUESTION TWO [20 MARKS]

a. State any five operations that can be performed on an RMI registry. [5 marks]

b. Discuss the following chat handler. [6 marks]

```
public class ChatHandler extends Thread {
Socket socket;
DataInputStream in;
DataOutputStream out;
static Set<ChatHandler> handlers = new HashSet<ChatHandler>();

  public ChatHandler(Socket socket) throws IOException {
    this.socket = socket;
    in = new DataInputStream(socket.getInputStream());
    out = new DataOutputStream(socket.getOutputStream());
   handlers.add(this);
  }
```

c.Java provides two mechanisms for distributed computing. Discuss. [4 marks]

d .Describe how a client application communicates with a server on different WANS while using the TCP/IP model. [5 marks]

## QUESTION THREE [20 MARKS]

a. Discuss the RMI procedure. [10 marks]

b. Describe how wireless routers can be used to connect remote-site LANS. [6 marks]

c. Discuss with an example Remote Method Invocation (RMI). [4 marks]

## QUESTION FOUR [20 MARKS]

a. Describe the RMI Architecture. [10 marks]

b. Write a java program to implement a client and server chat application. [10 marks]

## QUESTION FIVE [20 MARKS]

a. Write a java program to describe a simple echo server. [10 marks]

b. Johns Android mobile phone has 20 applications and only 15 are able to communicate on the internet. Explain why the remaining five are not able to communicate. [4 marks]

c. Describe the stages you would follow to develop a client server program. [6 marks]