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**UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY
EXAMINATIONS**

**YEAR ONE SEMESTER TWO EXAMINATIONS
FOR THE DEGREE OF
BACHELOR OF SCIENCE COMPUTER SCIENCE**

**COURSE CODE : CSC 373E/370
COURSE TITLE : NETWORK PROGRAMMING**

DATE: 31/07/2023 TIME: 08:00 A.M – 10:00 A.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE [COMPULSORY] [30 MARKS]

- a. State any five operations that can be performed on an RMI registry. [5marks]
- b. Differentiate between RIP, IGRP and IS-IS routing protocols. [6marks]
- c. Describe how wireless routers can be used to connect remote-site LANS. [6marks]
- d. Correct the following Socket Java Program. [5marks]

```
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»  
}
```

- e. Differentiate between a server socket and a server port. [2marks]
- f. What do you understand by passing of arguments in RMI. [2marks]
- g. Explain the function of a protocol analyzer. [4marks]

QUESTION TWO [20 MARKS]

- a. Explain any five characteristics of TCP protocol. [5marks]
- b. Discuss the following chat handler. [6marks]

```
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. [4marks]
- d. Describe how a client application communicates with a server on different WANS while using the TCP/IP model. [5marks]

QUESTION THREE [20 MARKS]

- a. Discuss the RMI procedure. [10marks]
- h. Define the following terms: [6marks]
- i. Protocol
 - ii. Daemon
- b. Socket
- c. Discuss with an example Remote Method Invocation (RMI). [4marks]

QUESTION FOUR [20 MARKS]

- a. Describe the RMI Architecture. [10marks]
- b. Write a java program to implement a client and server chat application. [10marks]

QUESTION FIVE [20 MARKS]

- a. Write a java program to describe a simple echo server. [10marks]
- 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. [4marks]
- c. Describe the stages you would follow to develop a client server program. [6marks]