(The University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS
UNIVERSITY REGULAR EXAMINATIONS
2023/2024 ACADEMIC YEAR
SECOND YEAR 2ND SEMESTER EXAMINATIONS

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

COURSE CODE: **BCS 226**
COURSE TITLE: **CLIENT SERVER ARCHITECTURE**

DATE: MONDAY 8TH APRIL, 2024 **TIME:** 11.30AM – 1:30PM

INSTRUCTIONS TO CANDIDATES

Answer Question **ONE (1)** and Any **OTHER 2** questions
Ensure your answers/ideas are clearly expressed
All your answers must be clearly numbered
Write in ink. Rough work can be done (in answer booklet) in pencil and will not be marked. Cross out any rough work.
Calculators, phones, tablets, computers not allowed

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

QUESTION ONE — COMPULSORY — 30 MARKS

a) Explain your understanding of symmetric multi-processing [4 Marks]
b) Outline what one needs to consider when dealing with client server security [3 Marks]
c) What are the five major technologies that can be used to create C/S applications [5 Marks]
d) List any 6 base services offered by OS in the client server environment [6 Marks]
e) Elaborate your understanding of the two broad classes of middleware [4 Marks]
f) Elucidate on benefit of the three-tier architecture model [2 Marks]
g) What is ACID property in client server environment [4 Marks]
h) Explain the use of super servers in a C/S environment [2 Marks]

QUESTION TWO — 20 MARKS

a) RAI Investment Group intends to centralize their operations by introducing a server in their network. Discuss the benefits that will accrue to the organization [10 Marks]
b) There are various forces that drive the move to client/server computing. Discuss [10 Marks]

QUESTION THREE — 20 MARKS

a) Critically assess the advantages of understanding the TCP/IP protocol stack when undertaking the design of a client server system. Taking particular care to highlight the differences at the transport layer and how that may affect your approach to the solutions that you choose. [12 Marks]
b) Discuss the fallacies behind Client/Server Computing [8 Marks]

QUESTION FOUR — 20 MARKS

a) A plan is normally developed before starting the design and development of client server system. The objective of the plan is to build and obtain end user and managerial support for the future client/server environment. Describe the six main phases that are part of the plan to enable development of client/server systems. [10 Marks]
b) Examine the code below and answer the questions that follow: -

```
1:from socket import *
2:serverPort = 12000
3:serverSocket = socket(AF_INET, SOCK_DGRAM)
4:serverSocket.bind(('', serverPort))
5:print "The server is ready to receive"
```

```
6:while 1:
7:  message, clientAddress = serverSocket.recvfrom(2048)
8:  modifiedMessage = message.upper()
9:  serverSocket.sendto(modifiedMessage, clientAddress
```

(i) Explicitly explain what is taking place in line 4 and 7 [4Marks]
(ii) What transport protocol is in use and why? [2Marks]
(iii) What is the importance of the global class [2Marks]

c) Explain your understanding of a structured query language. [2 Marks]

QUESTION FIVE — 20 MARKS

a) There are four basic server types namely Iterative connectionless; Iterative Connection -oriented; Concurrent Connectionless and Concurrent Connection-oriented Discuss the above. [8 Marks]

b) Define the following terms in relation to client server computing. [5Marks]
i. Client
ii. DHCP
iii. Remote Procedure call
iv. Dynamic Data Exchange
v. Socket

c) Describe the benefits of client server computing [7 Marks]