JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE IN SECURITY AND FORENICS

2ⁿᵈ YEAR 2ⁿᵈ SEMESTER 2022/2023 ACADEMIC YEAR

MAIN CAMPUS

COURSE CODE: ICB 1214

COURSE TITLE: Computer system and Networking Lab

EXAM VENUE: **STREAM:**

DATE: **EXAM SESSION:**

TIME: 2.00 HOURS

INSTRUCTIONS:

1. **Answer Question 1 (Compulsory) and ANY other two questions**
2. **Candidates are advised not to write on the question paper**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

QUESTION 1

a) What are three critical things that you should put in consideration when deciding which model to implement in a network? **(3marks)**

b) In your own opinion do you think that a hub would play any important role in a network infrastructure **(2marks)**

c) Why switch is considered intelligent hub? **(4marks)**

d) Distinguish between a bridge and router? **(4marks)**

e) What are the subnet mask of class A, B and C respectively? **(3marks)**

f) State the respective range of Class A, B and C IP addresses? **(3marks)**

g) Distinguish between a public network and private network? **(2marks)**

h) What is and IP conflict explain what cause it? **(2marks)**

i) What do you understand by the term classless inter-routing domain? **(2marks)**

j) What is routing? Differentiate between source routing and hop-by-hop routing methods. **(4marks)**

k) What do you understand by the term switch loops how do you address it **(2marks)**

QUESTION 2

a) Given the following 192.168.10.0 = Network address 255.255.255.240 = Subnet mask provide the following

   i. How many subnets? **(2marks)**

   ii. How many hosts per subnet? **(2 marks)**

   iii. What are the valid subnets **(2 marks)**

   iv. What's the broadcast address for each subnet? **(4 marks)**

   v. What are the valid hosts? **(4 marks)**

   vi. How many hosts are available with a Class C /29 mask? **(3marks)**

   vii. You have a Class B network and need 29 subnets. What is your mask? **(3marks)**

QUESTION 3

    a) You have a local server that you want to be accessed remotely as a network administrator explain using a diagram how you would make this possible **(10 marks)**

    b) Using Class C IP address and following the classfull approach explain by the aid of a diagram the logical implementation a network with three subnets label each and every component appropriately **(10marks).**

QUESTION 4

    a) Distinguish between Network Address Translation (NAT) and Port Address Translation (PAT) **(4mark)**

    b) Sate the Private IP address ranges for Class A and C addresses with their respective subnet masks. **(2marsk)**

    c) Distinguish between LAN WAN MAN and PAN **(8marks)**

    d) Distinguish between Connection-Oriented Protocols and Connectionless Protocols **(4 marks)**

    e) What role does a repeater and a hub play in network? **(4marks)**

QUESTION 5

a) Identify and describe the functions of each of the seven layers of the OSI reference model **(14 marks)**

a) Briefly explain how they three way handshake works **(4marks)**

b) Define and describe the function of a MAC address **(2marks)**