



**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**

**2<sup>nd</sup> YEAR 2<sup>nd</sup> SEMESTER 2022/2023 ACADEMIC YEAR**

**MAIN CAMPUS**

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**COURSE CODE: ICB 1214**

**COURSE TITLE: Computer system and Networking Lab**

**EXAM VENUE:**

**STREAM:**

**DATE:**

**EXAM SESSION:**

**TIME: 2.00 HOURS**

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**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) State 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)**