JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL INFORMATICS AND INNOVATIVE SYSTEMS

UNIVERSITY EXAMINATION FOR THE DIPLOMA IN LINUX ENGINEERING 1ST YEAR 1ST SEMESTER 2022/2023 ACADEMIC YEAR

KISUMU CAMPUS

COURSE CODE: ICT 2113

COURSE TITLE: NETWORK INSTALLATION, MAINTENANCE AND ADMINISTRATION

EXAM VENUE:

STREAM: Dip. Linux Engineering

DATE:

EXAM SESSION:

TIME: 2 HOURS

Instructions:

1. **Answer question 1 (Compulsory) and ANY other 2 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 ONE: (30 Marks)

a) Define the following terms as used with network administration (4 marks)
   i. Computer network
   ii. Phase shift
   iii. Server
   iv. Workstation

b) There are several configuration models that form a computer network. The most common of these are the centralized and distributed models. Differentiate between centralized and distributed models (2 marks)

c) Differentiate between the following terms (4 marks)
   i. Time-Division Multiplexing (TMD) and Frequency-Division Multiplexing (FDM)
   ii. Circuit switching and Packet Switching
   iii. MAC address and IP address
   iv. ARP and DNS

d) Give FIVE differences between OSI Model and TCP/IP Model (10 marks)

e) Describe briefly the following; (6 marks)
   a. Internet Protocol
   b. Transmission Control Protocol
   c. User Datagram Protocol

f) Protection of systems and users from intruders is a very important aspect of system administration in a network environment is. However carefully you have configured your site, some problem will surface eventually. Explain some of the problems that can surface in a LAN and how to overcome them. (4 marks)

QUESTION TWO (20 MARKS)

a) Broadly speaking there are two types of network configurations; peer-to-peer and client-server networks explain (10 marks)

b) Compare peer-to-peer and client-server networks (10 marks)

QUESTION THREE (20 MARKS)

a) Your school is establishing a LAN soon. You are appointed to create, configure and maintain the network. Describe five network components (devices) you expect to use. (10 marks)

b) List five advantages and disadvantages of Wireless Local Area Network (WLAN) (10 marks)

QUESTION FOUR (20 MARKS)

a) Define the following terms as used in network virtualization (4 marks)
   i. Hypervisor
   ii. Emulation

b) Explain the four types of Computing System Virtualization (8 marks)

c) Computing system virtualization is a technology that has brought to the computing community a lot of benefits. Describe THREE benefits (6 marks)

d) Pathways between the desktop and the virtual infrastructure are prone to eavesdropping, data leakage, and man-in-the middle attacks. There is a need to secure the pathways. Mention TWO best practices today for securing these pathways. (2 marks)

QUESTION FIVE (20 MARKS)

a) Describe the THREE security objectives of a network system (6 marks)

b) What do you understand by the following terms; (6 marks)
   i. Threat
   ii. Vulnerability
   iii. Attack

c) In a physical state, a facility is secure if it is protected by a barrier like a fence, has secure areas both inside and outside, and can resist penetration by intruders. This state of security can be guaranteed if four protection mechanisms are in place. Explain the FOUR protection mechanisms (8 marks)