



(KNOWLEDGE FOR DEVELOPMENT)

KIBABII UNIVERSITY

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UNIVERSITY EXAMINATIONS

2024/2025 ACADEMIC YEAR

END OF SEMESTER EXAMINATION

YEAR ONE SEMESTER TWO EXAMINATION

**FOR THE DEGREE OF BACHELOR OF SCIENCE
IN**

(INFORMATION TECHNOLOGY)

COURSE CODE: BIT 1250

COURSE TITLE: DATA COMMUNICATION

DATE: 22/04/ 2025 TIME: 2.00P.M - 4.00P.M 2HRS

INSTRUCTIONS

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE COMPULSORY (30 MARKS)

- a) State any three components of data transmission (3mks)
- b) Describe any three functions of a firewall (3mks)
- c) Differentiate between half duplex and full duplex transmission. (3mks)
- d) Explain the four layers in a TCP/IP model. (4mks)
- e) Outline any four signal propagation issues that lead to transmission impairment. (4mks)

- f) Differentiate between frequency and amplitude modulation techniques (3mks)
- g) Explain briefly the function of DHCP protocol (3mks)
- h) Using a diagram describe the process of symmetric encryption (4mks)
- i) Outline the three core principles of security in IT field (3mks)

QUESTION TWO (20 MARKS)

- a) Differentiate between TCP and UDP protocols (4mks)
- b) Network authentication is used to keep off unauthorized users from accessing network resources. Describe **three** types of authentications that are commonly used (6mks)
- c) During installation of a computer star topology network, several components should be considered. Describe any **four** such components. (4mks)
- b) Describe **three** functions of the OSI datalink layer (6mks)

QUESTION THREE (20 MARKS)

- a) State any **four** differences between IPV4 and IPV6 network addressing schemes (4mks)
- b) Ethernet uses data encapsulation technique to facilitate data transmission from sender to receiver. Explain **two** benefits of such technique (4mks)
- c) Jack, a network support assistant was required to test TCT/IP connection for a newly installed network in their firm. Describe three tools that he could use to complete the task. (6mks)
- d) Describe **three** functions of the OSI transport layer. (6mks)

QUESTION FOUR (20 MARKS)

- a) Anne intends to design an institutional network with several subnets. Outline four reasons that would influence her decision to use subnets (4mks)
- b) Explain four circumstances under which fibre cable would be the most appropriate when installing a computer network (4mks)
- c) Explain any four types of intrusion detection systems (4mks)
- d) Distinguish between frequency division multiplexing and time division multiplexing. (4mks)
- e) Explain two uses of an endpoint antivirus software (4mks)

QUESTION FIVE (20 MARKS)

- a) Sally was required to design a computer network for a client. Outline four guidelines that she should follow during the design stage (4mks)
- b) Briefly explain the **four** types of firewalls (4mks)
- c) Draw a well labelled diagram of an Ethernet frame (6mks)
- d) Describe any **three** challenges facing wireless communication today. (6mks)