



KENYATTA UNIVERSITY

EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION

SCO 128: DATA COMMUNICATION AND NETWORKING

2ND SEMESTER 2023/2024

TIME: 2 HOURS

INSTRUCTIONS:

Answer question ONE and any other TWO questions

QUESTION ONE

- (a) Define the following terms.
 - (i) Routing
 - (ii) Point-to-Point configuration
 - (iii) Half-duplex
 - (iv) Parity bit
 - (v) Hub

(5 marks)
- (b) Explain any four factors you will consider when selecting a media.

(8 marks)
- (c) Given the data 010110100110 that needs to be transmitted show how you can use the **bipolar: Alternate Mark Inversion (AMI)** bipolar technique to send the data.

(5 marks)
- (d) There are three fundamentals approaches to routing explain these three approaches.

(6 marks)
- (e) Explain three benefits that an organization will get for using the local area network.

(6 marks)

QUESTION TWO

- (a) With aid of a suitable diagram discuss the fiber-distributed data technologies use in the backbone network and how it manages a broken circuit.

(11 marks)
- (b) Using a suitable diagram discuss how the **Single-Switch Virtual LAN** operates.

(9 marks)

QUESTION THREE

The management of Awendo fish processing Company has decided to computerize their operations by introducing a number of information systems. Further the organization has decided to introduce a local area network so as to share information. Assume you have been employed as an information systems security officer. Part of your responsibilities shall be required to maintain the security of the company's network.

- (i) Discuss why security of local area network has become a paramount issue to consider when the organization decided to introduce it in the organization. (6 marks)
- (ii) Discuss how you will perform the risk assessment for your network. (14 marks)

QUESTION FOUR

- (a) Discuss the three basic architectures used in dedicated –circuit networks. (9 marks)
- (b) Discuss the two methods that are used to implement the packet interleaving concept in the packet switched networks. (6 marks)
- (c) Discuss how increase circuit capacity can improve the wide area network (WAN) performance. (5 marks)

QUESTION FIVE

- (a) Using suitable diagram discuss the logical topology of the wireless Ethernet network. (5 marks)
- (b) In the wireless LAN we have a problem of hidden node.
 - (i) Explain what you understand by the term hidden node
 - (ii) Discuss how this problem has been addressed. (15 marks)