

KASNEB

DICT LEVEL II

COMPUTER NETWORKING

MONDAY: 23 May 2016.

Time Allowed: 3 hours.

Answer ALL questions. Marks allocated to each question are shown at the end of the question.

QUESTION ONE

- (a) Define the following terms as used in computer networks:
- (i) Dumb terminal. (2 marks)
 - (ii) Signal encoding. (2 marks)
 - (iii) Bandwidth. (2 marks)
- (b) Describe four network communication devices which enable interconnection between different types of computer networks. (8 marks)
- (c) Distinguish between each of the following pairs of terms as used in data transmission:
- (i) "Asynchronous data transmission" and "synchronous data transmission". (2 marks)
 - (ii) "Serial data transmission" and "parallel data transmission". (2 marks)
 - (iii) "Error detection" and "error correction". (2 marks)

(Total: 20 marks)

QUESTION TWO

- (a) Explain the following transmission media used in computer networking:
- (i) Microwave. (2 marks)
 - (ii) Satellite. (2 marks)
 - (iii) Twisted pair cable. (2 marks)
- (b) Highlight the typical uses of the following wireless technologies:
- (i) Bluetooth. (2 marks)
 - (ii) Wi-Fi. (2 marks)
- (c) Outline four factors to consider when selecting a network data transmission medium. (4 marks)
- (d) Examine three factors that affect the performance of computer network. (6 marks)

(Total: 20 marks)

QUESTION THREE

- (a) A network adapter card usually has two indicator lights (LEDs). It also performs several vital roles in a computer network.

Required:

- (i) Stating the function of each, identify the two LEDs. (4 marks)
- (ii) Enumerate five roles performed by a network adapter. (5 marks)

- (b) Philip Kaikai, needed to set up both a peer to peer and a client/server network.

Identify any three types of network operating systems that Philip Kaikai could use to manage the above networks. (3 marks)

- (c) In large computer networks there might be multiple paths linking the data sensor and data receiver. Data may be switched as it travels through various communication channels to ensure reliability and efficiency.

Required:

Describe four data switching techniques that could be applied to achieve the above goals. (8 marks)
(Total: 20 marks)

QUESTION FOUR

- (a) With the aid of a diagram, describe the seven layers of the open systems interconnection (OSI) model. (14 marks)

- (b) Alex Bii wishes to purchase a network server for use in his business.

Highlight six factors that Alex Bii should consider when purchasing the network server. (6 marks)
(Total: 20 marks)

QUESTION FIVE

- (a) You have been requested to set up a wireless personal area network (PAN) that should accommodate different types of computing devices.

Required:

Using an illustration explain how you would perform the above task. (6 marks)

- (b) State the effect of configuring a firewall for the network in (a) above with the following rules:

(i) Deny inbound all. (1 mark)

(ii) Deny inbound from 198.200.1.3 (1 mark)

- (c) Explain each of the following transmission control protocol/internet protocol (TCP/IP) technologies:

(i) Ethernet. (2 marks)

(ii) Token Ring. (2 marks)

(iii) Fibre distributed data interchange (FDDI). (2 marks)

- (d) Differentiate between "connection-oriented" and "connectionless" service as used in computer networks. (6 marks)
(Total: 20 marks)
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