## kasneb

## DICT LEVEL II

## COMPUTER NETWORKING

**MONDAY: 21 May 2018.**                                                 **Time Allowed: 3 hours.**

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

### QUESTION ONE
(a)   Highlight four advantages of using internal modems over external modems for network interconnectivity.   (4 marks)

(b)   Describe each of the following types of backbone networks:

    (i)      Serial backbone network.                                                                      (2 marks)

    (ii)     Collapsed backbone network.                                                            (2 marks)

    (iii)    Distributed backbone network.                                                         (2 marks)

(c)   . Charles Mutua needed to set up a mesh topology with a total of 20 nodes.

    **Required:**
    Advise Charles Mutua on the number of:

    (i)      Interfaces required for each node.                                                  (2 marks)

    (ii)     Links in the topology.                                                                     (3 marks)

(d)   Consider the Internet Protocol (IP) address 172.168.16.8

    **Required:**
    (i)      Convert the above IP address to an octal binary number.                    (3 marks)

    (ii)     Identify the network class to which the above IP address belongs.      (2 marks)
                                                     **(Total: 20 marks)**

### QUESTION TWO
(a)   Distinguish between "local talk LAN" and "Ethernet LAN".                               (4 marks)

(b)   Explain two possible types of clients in a peer to peer (P2P) computer network model.   (4 marks)

(c)   Describe three protocols of the internet layer of the TCP/IP model.                    (6 marks)

(d)   You have been requested to help in troubleshooting a malfunctioning computer network.

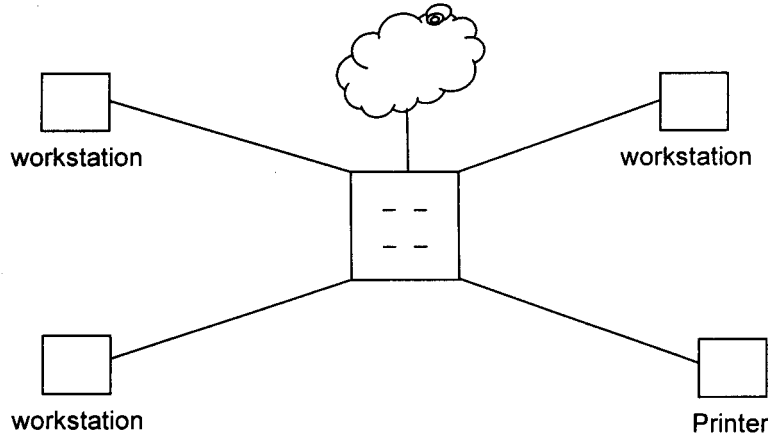    Enumerate six steps that you would follow in order to restore the network.             (6 marks)
                                                     **(Total: 20 marks)**

**QUESTION THREE**

(a)       The diagram below represents a network topology:



**Required:**

(i)      State the type of network topology shown in the diagram above.          (1 mark)

(ii)     Analyse three characteristics of the above network topology.        (3 marks)

(iii)    Outline two advantages of using the above network topology.        (2 marks)

(b)       Most organisations are shifting from the use of copper cables to fibre optic cables in the design of computer networks.

          Highlight four reasons for the above trend.         (4 marks)

(c)       Summarise four functions of a network operating system (NOS).      (4 marks)

(d)       Evaluate three criteria that could be used to classify data communication networks.      (6 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

(a)       The rapid advance in information and communication technology (ICT) has given rise to "convergent networks".

          With reference to the above statement:

(i)      Define the term "convergent network".         (2 marks)

(ii)     Explain three benefits of a convergent network.        (6 marks)

(iii)    Evaluate three requirements of a convergent network.        (6 marks)

(b)       "Network hosts that do not require access to the internet can use private addresses".

          With reference to the above statement, break down the range of IP addresses from class A to class C.      (6 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a)       Illustrate how a wired computer network would integrate with a wireless computer network.      (4 marks)

(b)       Highlight four advantages and four disadvantages of a wired communication system.      (8 marks)

(c)       Citing four reasons, justify why an organisation would invest in a computer network.      (4 marks)

(d)       Enumerate the steps you would follow to configure internet connection in an Ethernet Local Area Network (LAN).      (4 marks)

**(Total: 20 marks)**

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