KASNEB

DICT LEVEL II

COMPUTER NETWORKING

MONDAY: 21 November 2016.   **Time Allowed: 3 hours.**

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

QUESTION ONE

(a)   Enumerate three advantages and three disadvantages of computer networks.   (6 marks)

(b)   Describe the following computer networking terms:

    (i)   MAC address.   (2 marks)
    (ii)   Proxy server.   (2 marks)
    (iii)   Subnet mask.   (2 marks)

(c)   Explain the roles of each of the following computer networking protocols:

    (i)   Address resolution protocol (ARP).   (2 marks)
    (ii)   File transfer protocol (FTP).   (2 marks)
    (iii)   Hypertext transfer protocol (HTTP).   (2 marks)
    (iv)   Transmission control protocol (TCP).   (2 marks)
                                       (Total: 20 marks)

QUESTION TWO

(a)   You have been contracted to design a network architecture for ABC Company Limited.

    Discuss five factors that you would consider in carrying out the above task.   (10 marks)

(b)   Distinguish between each of the following pairs of internet-working devices:

    (i)   A bridge and a switch.   (4 marks)
    (ii)   A hub and a router.   (4 marks)

(c)   In the context of networking, explain the meaning of the term "dynamic host configuration protocol (DHCP)". (2 marks)
                                       (Total: 20 marks)

QUESTION THREE

(a)   Define the following terms as used in data transmission:

    (i)   Communication satellite.   (2 marks)

    (ii)   Uplink channel.   (2 marks)

    (iii)   Geostationary satellite.   (2 marks)

(b)   List four types of guided transmission media.   (4 marks)

(c)   Describe two major roles played by the following layers of the Open Systems Interconnection (OSI) reference model:

    (i)   Data Link Layer.   (2 marks)

    (ii)   Physical Layer.   (2 marks)

    (iii)   Internet Layer.   (2 marks)

(d)   In the context of data transmission, differentiate between "impedance" and "attenuation".   (4 marks)
                                       (Total: 20 marks)

QUESTION FOUR

(a)   Highlight four advantages of implementing a server-based network as opposed to other types of networks.   (4 marks)

(b)   Ms Wairiuko, a lab technician, wanted to set up a network using class A Internet Protocol address. The Internet Service Provider (ISP) company however advised her not to use the IP address 127.0.0.0.

Required:

(i) Explain to Ms Wairiuko the reason why 127.0.0.0 could not be used as a valid network address. (2 marks)

(ii) Ms Wairiuko had wished to connect 20 hosts in her network.

Advise her on the best IP address class to use and justify your choice. (4 marks)

(c) "Standards are critical components in computer networking".

Highlight four reasons in support of the above statement. (4 marks)

(d) Outline six factors to consider when performing computer network cable installation and maintenance. (6 marks)

(Total: 20 marks)

QUESTION FIVE

(a) Explain each of the following logical topologies:

(i) Fiber Distributed Data Interface (FDDI). (2 marks)

(ii) Asynchronous Transfer Mode (ATM). (2 marks)

(b) Describe each of the following network troubleshooting tools: ·

(i) Nslookup. (2 marks)

(ii) Netstat. (2 marks)

(c) "Even with critical and more diverse usage at work and in the corporate setup, computer networks still remain an important tool for use at home".

With reference to the above statement, analyse four applications of computers at home. (8 marks)

(d) Outline two advantages and two disadvantages of a star network topology. (4 marks)

(Total: 20 marks)

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