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DICT LEVEL II

COMPUTER NETWORKING

MONDAY: 23 November 2020.

Time Allowed: 3 hours.

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

QUESTION ONE

- (a) (i) With the aid of illustrations, distinguish between “digital data transmission mode” and “analogue data transmission mode”. (4 marks)
  - (ii) Outline four benefits of digital data transmission mode over analogue data transmission mode. (4 marks)
  - (b) Citing an example in each case, describe the following types of networks:
    - (i) LAN. (2 marks)
    - (ii) WAN. (2 marks)
    - (iii) MAN. (2 marks)
  - (c) Explain three functions of a network operating system (NOS). (6 marks)
- (Total: 20 marks)

QUESTION TWO

- (a) Network monitoring is critical in networks with multiple links established between geographically separated data centres, public and private clouds.

**Required:**

    - (i) Explain the meaning of the term “network monitoring”. (2 marks)
    - (ii) Summarise four functions of a network monitoring tool. (4 marks)
    - (iii) Highlight four logical security configuration measures you would deploy in networks described above. (4 marks)
    - (iv) Describe two criteria you would use to measure the reliability of networks. (4 marks)
  - (b) Citing their primary functions, differentiate between networking protocols and networking standards. (6 marks)
- (Total: 20 marks)

QUESTION THREE

- (a) Distinguish between each of the following pairs of terms as used in computer networks:
  - (i) A bridge and a switch. (4 marks)
  - (ii) An active hub and a passive hub. (4 marks)
  - (iii) A network edge device and a network node. (4 marks)
- (b) Enumerate three objects in a network environment that a network administrator could share in the context of an organisation. (3 marks)

- (c) (i) Define the term “terminator” in the context of computer networks. (2 marks)
  - (ii) Explain the purpose of terminating an Ethernet network cable. (2 marks)
  - (iii) State the type of terminator used in (c) (ii) above. (1 mark)
- (Total: 20 marks)**

**QUESTION FOUR**

- (a) Describe the following terms as used in wireless data propagation:
  - (i) Ground wave propagation. (2 marks)
  - (ii) Line of sight propagation. (2 marks)
  - (iii) Skywave propagation. (2 marks)
- (b) Miss Sarah, a manager at ABC Company Limited needed to expand her company by adding more computers across all branches. She was advised to implement VLAN for the company network to be a success.
 

**Required:**

  - (i) Explain the meaning of the abbreviation VLAN. (2 marks)
  - (ii) Discuss three benefits that could accrue from deployment of a VLAN to the company. (6 marks)
- (c) Domain name system uses both transmission control protocol (TCP) and user datagram protocol (UDP).
 

Assess six differences between TCP and UDP. (6 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

- (a) (i) Explain the difference between the physical network topology and the logical network topology. (4 marks)
  - (ii) With the aid of a diagram, describe the physical topology that uses a hub as a centralised device to connect all computers. (6 marks)
  - (iii) Suggest four factors that you should consider in determining the type of network topology for an organisation. (4 marks)
  - (b) Using a diagram, explain how data is transmitted along a fiber optic cable. (6 marks)
- (Total: 20 marks)**
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