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DICT LEVEL II

COMPUTER NETWORKING

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MONDAY: 20 May 2019.

Time Allowed: 3 hours.

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

QUESTION ONE

- (a) Highlight six benefits of networking computers in an organisation. (6 marks)
- (b) Explain two roles of each of the following computer network personnel:
- (i) Systems administrator. (2 marks)
 - (ii) Network analyst. (2 marks)
 - (iii) Network manager. (2 marks)
 - (iv) Network engineer. (2 marks)
- (c) Citing an example in each case, explain three types of computer networks. (6 marks)

(Total: 20 marks)

QUESTION TWO

- (a) Mr. Tommy, the Principal of Excellent ICT College intends to provide internet services to both the staff and students in the college. An expert in computer networking has advised that Mr. Tommy will require the following components:
- (i) Data terminal equipment.
 - (ii) Networking software.
 - (iii) Connectivity devices.
 - (iv) Data communication media.
 - (v) Internet service provider.

Required:

Citing an example in each case, describe each of the above components. (10 marks)

- (b) The network design of a small office could fundamentally be different from that of an enterprise resource planning system for an international organisation.

With reference to the above statement, analyse five factors that you would consider when preparing a network design. (10 marks)

(Total: 20 marks)

QUESTION THREE

- (a) The transport layer in the transmission control protocol/Internet protocol (TCP/IP) model handles various transmission issues by creating some connection abstraction.

Required:

Examine how the transmission control protocol (TCP) achieves transmission through the following features:

- (i) Port numbers. (2 marks)
- (ii) Throughput management. (2 marks)
- (iii) Reliability. (2 marks)

- (b) State the reason why Carrier Sense Multiple Access/Collision Detect (CSMA/CD) protocol is not applicable in wireless connection. (2 marks)
- (c) Ipconfig is a utility tool used for troubleshooting computer network problems. Describe the two steps followed to acquire a new IP address using the ipconfig command. (4 marks)
- (d) Wireless broadband is high-speed internet that could be classified in different ways.

Required:

- (i) In relation to the above statement, complete the table below by citing examples of fixed and mobile broadband. (4 marks)

Wireless broadband	
Fixed wireless	Mobile wireless
(a)	(b)
(c)	(d)

- (ii) Outline four typical applications of wireless broadband. (4 marks)

(Total: 20 marks)

QUESTION FOUR

- (a) Differentiate between the following networking devices:
 - (i) "Gateway" and "router". (4 marks)
 - (ii) "Wireless access point" and "Wifi router". (4 marks)
- (b) Selecting an appropriate topology for network deployment environment depends upon several factors.

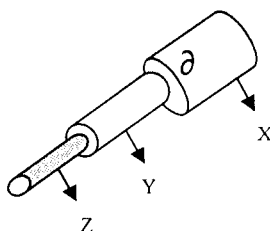
Required:

- (i) Summarise six factors to consider when deploying a topology. (6 marks)
- (ii) Outline three advantages and three disadvantages of mesh network topology. (6 marks)

(Total: 20 marks)

QUESTION FIVE

- (a) Distinguish between the following pairs of terms:
 - (i) "Network capacity" and "throughput". (4 marks)
 - (ii) "Interoperability" and "data transmission". (4 marks)
 - (iii) "Webserver" and "proxy server". (4 marks)
- (b) The diagram below represents the structure of a fibre optic cable:



Required:

Identify the parts labelled X and Z. (2 marks)

- (c) With the aid of an example in each case, describe the following types of threats to a computer network:
 - (i) Environmental threats. (2 marks)
 - (ii) Procedural threats. (2 marks)
 - (iii) Logical security threats. (2 marks)

(Total: 20 marks)

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