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DICT LEVEL II

COMPUTER NETWORKING

MONDAY: 27 November 2017.

Time Allowed: 3 hours.

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

QUESTION ONE

- (a) Explain the meaning of the following terms as used in computer networking:
- (i) Network address translation (NAT). (2 marks)
 - (ii) Domain name system (DNS). (2 marks)
 - (iii) Ethernet. (2 marks)
- (b) Highlight six inherent characteristics of a wireless data communication system which make it attractive to many users. (6 marks)
- (c) With the aid of a diagram, describe the physical structure of each of the following transmission media:
- (i) Coaxial cable. (4 marks)
 - (ii) Fibre optic cable. (4 marks)
- (Total: 20 marks)**

QUESTION TWO

- (a) Nodes connected in a cyclical structure are said to be in a ring topology:
- Required:**
- (i) Explain the technique used to eliminate collision in a ring topology. (2 marks)
 - (ii) Outline three advantages and three disadvantages of a ring topology. (6 marks)
- (b) Distinguish between “transmission control protocol (TCP)” and the “user datagram protocol (UDP)”. (4 marks)
- (c) Mbuni secondary school recently purchased stand-alone computers for their new computer laboratory. Specifying the purpose in each case, identify four components that Mbuni Secondary School would require in order to network the laboratory. (8 marks)
- (Total: 20 marks)**

QUESTION THREE

- (a) Using illustrations, differentiate between a “link-local address” and a “loopback address” as used in computer networking. (4 marks)
- (b) State whether you would use a cross-over cable or a straight through cable when connecting each of the following devices using CAT 6 cables:
- (i) Switch and switch. (1 mark)
 - (ii) Computer and switch. (1 mark)
 - (iii) Router and router. (1 mark)
 - (iv) Computer and router. (1 mark)

(c) A network administrator will require to undertake a series of steps when subnetting a logical address to connect to different networks.

Explain three major steps needed to subnet a logical address. (6 marks)

(d) Explain the role of the following network troubleshooting tools:

(i) Pathping. (2 marks)

(ii) Ipconfig. (2 marks)

(iii) Route. (2 marks)

(Total: 20 marks)

QUESTION FOUR

(a) Explain the role of the following servers in a networked environment:

(i) Syslog server. (2 marks)

(ii) NTP server. (2 marks)

(iii) TFTP server. (2 marks)

(b) Impairment could introduce errors into digital signals being transmitted in a transmission medium. Noise is the main cause of signal impairment.

Required:

Explain three types of noise during signal transmission. (6 marks)

(c) Explain the following characteristics of a client/server network.

(i) Resource sharing. (2 marks)

(ii) Scalability. (2 marks)

(iii) Integrity. (2 marks)

(iv) Passive. (2 marks)

(Total: 20 marks)

QUESTION FIVE

(a) "Backbone is a term used to describe the cables handling major network traffic".

Describe three components of backbone cabling. (6 marks)

(b) Wide area networks (WANs) have become universal types of networks in many organisations.

With respect to the above statement, distinguish between each of the following technologies used to implement wide area networks (WANs):

(i) "Cellular broadband" and "satellite broadband". (4 marks)

(ii) "Circuit switching" and "packet switching". (4 marks)

(c) Analyse three challenges of wireless devices. (6 marks)

(Total: 20 marks)

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