

**QUESTION 1 (COMPULSORY)**

A computer is a device which can communicate with other devices on a network, regardless of the manufacturer or model of device. This communication between devices is achieved using specific protocols in a setup called a network. Answer the following questions regarding networking.

- a) Define the following terms in relation to networking (2 Marks)
- i) Protocol. (2 Marks)
  - ii) Windowing. (6 Marks)
- b) Explain the purpose of subnetting. (4 Marks)
- c) Explain the use of ping command. (8 Marks)
- d) Using **four (4)** key points, distinguish between TCP and UDP (18 Marks)
- e) Explain the functions of the first **six (6)** Layers of the OSI reference model. (18 Marks)
- Total (40 Marks)**

**QUESTION 2**

- a) State **five (5)** utilities/tools that can be used in network troubleshooting. (5 Marks)
- b) Explain **five (5)** error messages that are transmitted by the ICMP protocol. (10 Marks)

**Total (20 Marks)**

**QUESTION 3**

- a) Explain the following functional tasks of a protocol. (3 Marks)
- i) Time out control (3 Marks)
  - ii) Sequencing (3 Marks)
  - iii) Frame delimiting (3 Marks)
  - iv) Flow control (3 Marks)
- b) Describe a Wide Area Network (WAN). (3 Marks)
- Total (15 Marks)**

**QUESTION 4**

- a) Describe **five (5)** physical networking topologies that can be used to connect nodes in a local area network. (10 Marks)
- b) Explain the concept of Public Switch Telephone Network (5 Marks)
- Total (15 Marks)**

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### QUESTION 5 ✓

- a) Describe the following terms regarding data transmission
- i) Bandwidth (2 Marks)
  - ii) Transmission (2 Marks)
  - iii) Propagation Delay (2 Marks)
  - iv) Jitter (2 Marks)
  - v) Buffering (2 Marks)
- b) Explain the concept of a private network and Network Address Translation (NAT). (3 Marks)
- Total (15 Marks)**

### QUESTION 6

- a) Define the following network nodes
- i) Data Terminal Equipment (DTE) (2 Marks)
  - ii) Data Communication Equipment (DCE) (2 Marks)
- b) Describe **two (2)** guided media. (4 Marks)
- c) Explain the concept of segmentation in relation to collision. (3 Marks)
- d) Distinguish between the use of a packet sniffer in the hands of a network administrator and an intruder. (4 Marks)
- Total (15 Marks)**

### QUESTION 7 ✓

Describe the following computer networks:

- a) Local area network (3 Marks)
  - b) Metropolitan area network (3 Marks)
  - c) Campus network (3 Marks)
  - d) Personal area network (3 Marks)
  - e) Cloud Network (3 Marks)
- Total (15 Marks)**