sending computer　　　　**receiving computer**

7 The physical layer encodes the packets into the medium that will carry them – such as an analogue signal, if the message is going across a
50 telephone line – and sends the packets along that medium.

8 An intermediate node calculates and verifies the checksum for each packet. It may also reroute the message to avoid congestion on the network.

55 9 At the receiving node, the layered process that sent the message on its way is reversed. The physical layer reconverts the message into bits. The data-link layer recalculates the checksum, confirms arrival, and logs in the
60 packets. The network layer recounts incoming packets for security and billing purposes. The transport layer recalculates the checksum and reassembles the message segments. The session layer holds the parts of the message until the
65 message is complete and sends it to the next layer. The presentation layer expands and decrypts the message. The application layer converts the bits into readable characters, and directs the data to the correct application.

['How Computers Work' by Ron White and Timothy Edward Downs (Ziff-Davis Press) – Extract in PC Magazine, February 1993]

B **Re-read the text to find the answers to these questions.**

1 **Match the terms in Table A with the statements in Table B.**

Table A
a Bracketing
b Half-duplex
c Full-duplex
d Checksum

Table B
i Transmission mode in which each computer takes turns sending and receiving
ii Mathematical calculations based on the contents of data
iii Set boundaries for the beginning and end of a message
iv Transmission mode in which both computers send and receive at the same time

2 **Mark the following statements as True or False:**

a Most of the work that an application does to prepare a message for sending over a network is not seen by the user.
b ASCII is always used to transmit data.
c The encryption layer compresses the message.
d The network layer keeps track of how many packets are in each message.
e The network layer keeps a copy of each packet until it arrives at the next node undamaged.
f Analogue signals are used on ordinary telephone lines.
g When a message arrives at its destination, it passes through the same seven network communications layers as when it was sent, but in reverse order.

▶ **Additional exercises on page 77**