MODULE D DATA TRANSMISSION · D2

Serial, parallel and duplex

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 2.1.2

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. No calculator. The marks for each part are shown in brackets [ ]. The total for this worksheet is **20 marks**.

1

Total: 4 marks

A computer sends data to another device along a cable.

(a) Describe how data is sent using **serial** data transmission. **[2]**

(b) Describe how data is sent using **parallel** data transmission. **[2]**

2

Total: 4 marks

(a) Tick (✓) **one** box in each row to show the method of data transmission each link uses. **[4]**

Link	Simplex	Half-duplex	Full-duplex
A temperature sensor sends readings to a monitoring computer. No data is ever sent back to the sensor.			
Two security guards use handheld radios. Only one can talk at a time; then the other replies.			
Two offices hold a video call. Both can speak and be heard at the same time.			
A link carries data in both directions, but only one direction at a time.			

3 **Total: 4 marks**

A farm sends readings from a sensor in a field to an office computer 300 metres away by cable. It uses **serial** data transmission.

(a) Explain why serial data transmission is suitable for this link. **[3]**

(b) Give **one** disadvantage of serial data transmission. **[1]**

4 **Total: 6 marks**

Inside a printing machine, a control unit is joined to a print head by a cable 30 cm long. Large amounts of data are sent to the print head, and the print head sends status data back to the control unit at the same time. The cable uses **parallel full-duplex** data transmission.

(a) Explain why parallel data transmission is suitable for this cable. **[2]**

(b) Explain why full-duplex data transmission is suitable for this cable. **[2]**

(c) Give **two** disadvantages of parallel data transmission. **[2]**

1 .....

2 .....

5 **Total: 2 marks**

(a) Give **one** advantage of half-duplex data transmission compared with full-duplex. **[1]**

(b) Give **one** advantage of full-duplex data transmission compared with half-duplex. **[1]**

Total for this worksheet: 20 marks