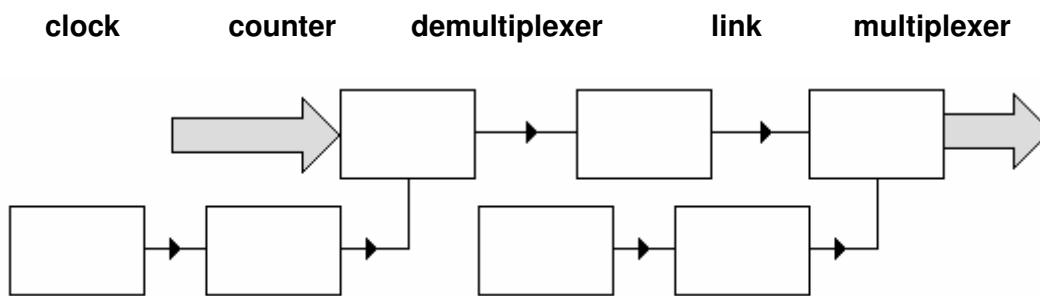


1 Complete this block diagram for a synchronous transmission system. Use these blocks.



2 Here are some statements about synchronous transmission systems. Which of them are true?

- The frame rate is twice the bandwidth.
- All of the channels can carry voice information.
- One channel will have to carry timing information.
- Only one channel is connected to the link at any moment.
- Each channel can carry either analogue or digital information.
- The transmitter has to tell the receiver when to start a new frame.
- Increasing the number of channels per frame increases the bandwidth.
- The transmitter and receiver must have clocks with matched frequencies.

3 Do calculations to complete this table for synchronous transmission systems.

| word length | channels per frame | maximum frequency | bit rate | bandwidth |
|-------------|--------------------|-------------------|---------------------------|-----------|
| 8 | 4 | 20 kHz | | |
| | 16 | 16 kHz | 6 144 000 s ⁻¹ | |
| 10 | 64 | | | 2.56 MHz |
| 6 | 32 | 8 kHz | | |

4 Link the **start** of each sentence to its correct **end**.

| start |
|--|
| The frame rate is equal to ... |
| The word length is equal to ... |
| The sample rate is equal to ... |
| The link bandwidth is equal to ... |
| The number of channels is equal to ... |

| end |
|---|
| ... the bit rate divided by two. |
| ... the sample rate for each channel. |
| ... the bits transmitted in each channel. |
| ... the bit rate divided by the frame rate. |
| ... twice the maximum signal frequency. |