EXERCISE CHAPTER 5: Time-Division Multiplexing (TDM)

QUESTIONS:

1. We need to use synchronous TDM and combine 20 digital sources, each of 100 Kbps. Each output slot carries 2 bit from each digital sources, but one extra bit is added to each frame for synchronization.
    a. What is the size of an output frames in bits?
    b. What is the output frame rate?
    c. What is the duration of an output frame?
    d. What is the output data rate? (6 marks)

2. Show the contents of the 5 output frames for a synchronous TDM multiplexer that combines 4 sources sending the following characters. Note that the characters are sent in the same order that they are typed. The third source is silent.

    Source 1: HYE
    Source 2: I AM
    Source 3:
    Source 4: KATIE

    (4 marks)

ANSWER

1. a) Size of output frames = 40 + 1 = 41 bits
   b) Frame rate = 100000 frame/sec
   c) Duration of an output frame = 1/frame rate = 1/100000 = 0.00001 seconds = 10 Microseconds
   d) Output data rate = frame rate X frame size = 100000 X 41 = 4100000 = 4.1Mbps

2.

0	H	I		K
1	Y			A
2	E	A		T
3		M		I
4				E