



Arab Academy for Science & Technology and Maritime Transport
College of Engineering and Technology

Department : Electronics and Communications

Course : Electronic Measurements (Mechatronics)

Course Code: EC416

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Problem Set #2

Measurements of Voltage, Frequency and Phase

1-Determine the peak to peak voltage and the frequency for each of the two waveforms shown in Fig. 1. Also, determine the phase difference (phase shift) between them.

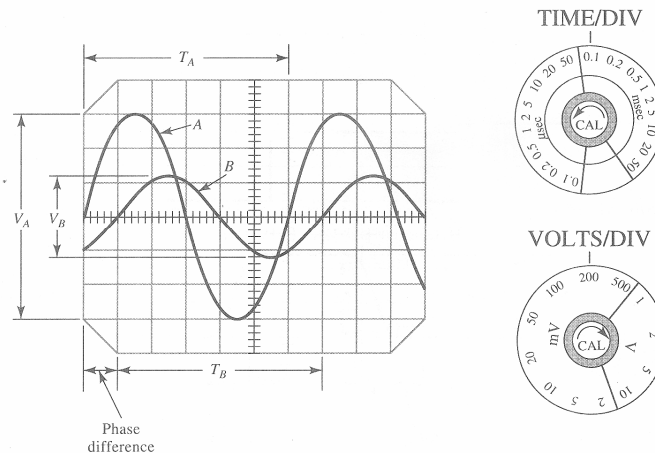


Fig. 1.

2- Determine the peak voltage and the phase difference for the two signals shown in Fig. 2. Given that the TIME/DIV control is set to 0.6 ms and the VOLTS/DIV control is set to 15 mv.

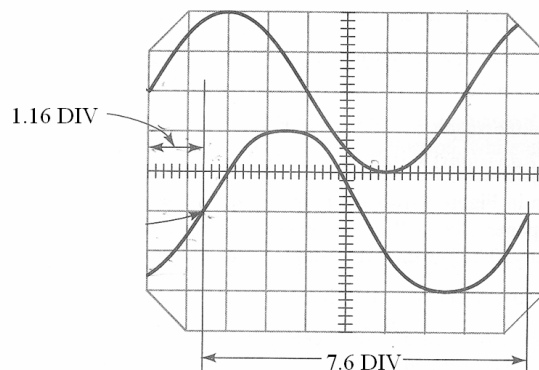


Fig. 2.

3- The two signals shown in Fig. 3 are displayed on an oscilloscope. The oscilloscope TIME/DIV control is set to $20\mu s$ and its VOLTS/DIV control is set to 10 mv. Determine the root mean square values and the frequencies of the displayed signals.

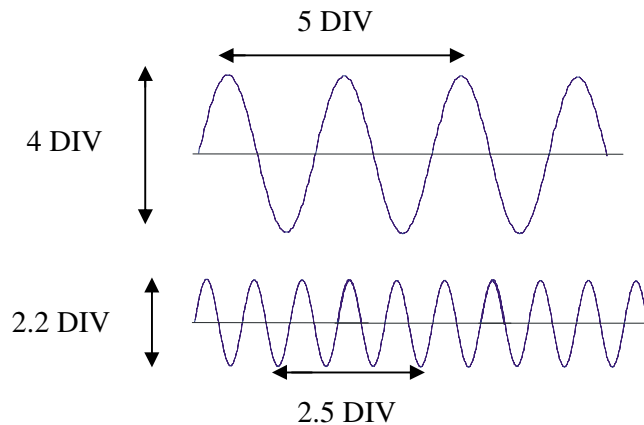


Fig. 3.

4- A pulse waveform is fed into a circuit. The input and output signals are displayed as shown in Fig. 4. The TIME/DIV control is set to $1\mu s$ and the VOLTS/DIV control is set to 0.5 mv. The delay time, rise time and fall time correspond to 0.95, 0.85 and 0.9 divisions respectively.

- (a)** Determine (i) The PA (pulse amplitude), the period and the frequency of the input signal. (ii) The PW (pulse width) and SW (space width) of the input signal. (iii) The delay time, rise time and fall time of the output signal.
- (b)** Indicate all parameters on the plot.

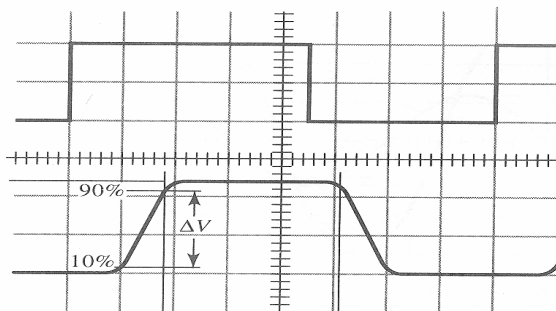


Fig. 4.