SBP 223
ULTRASONIC EXPERIMENT(GRATING)

Human ear is sensitive to sounds of frequency lying between 20 Hz and 20 Khz. The ear is unable to hear sounds of frequency less than 20 Hz and more than 20KHz. The sounds of frequency less than 20 Hz are called **Infrasonics** whereas those of frequency more than 20 KHz are called **Ultrasonics.** In other words ultrasonics are longitudinal mechanical waves of frequency beyond the highest audible frequency range i.e. 20 KHz. As the frequency is very high, the wave length is very low (about 1.6 cm)

Piezo-electric Effect:

When a slab of **quartz** or **tourmaline** is subjected to a mechanical pressure on one pair of parallel faces, electric charges are developed on the other pair of parallel faces perpendicular to the first pair. The quantity of charge developed is proportional to the applied pressure. The sign of charge changes when the pressure is changed into tension. This phenomenon is known as **Piezo-electric effect.**

Objective: Determine the velcoity of ultrasonic waves in liquid using spectrometer(grating method)

Technical Specifications:

High Grade Spectrometer : Fitted with eye piece, slit and all necessary critical components.

SPECIFICATIONS OF SPECTROMETER:

Base Type	: Cast iron
Circle dia	: 175 mm. (7”)
Scale Type	: Brass
Main scale	: 0 - 360°
Vernier scale	: 60 div

Collimator :

Tube length	: 160 mm.
Focal length of Achromatic lens	: 175 mm. (Approx.)

Telescope

Tube length	: 185 mm. Long tube
Focal length of Achromatic lens	: 175 mm. (Approx.)
Crystal	: Quartz Crystal mounted in glass container
Frequency	: 4Mhz approx.
R.F. Oscillator	: Variable frequency
Display	: 31/2 Digit Digital display of frequency
Light Source	: Sodium lamp with box & Transformer

Photographs are for reference only final product may vary from it

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