EXPT-9 SIGNAL PROCESSING USING CRO 17/10/16

AIM: Generate and visualize waveforms and their mixing

APPARATUS REQUIRED:

Cathode ray oscilloscope and Function generator

SLO:

- Basic operation of CRO
- Study of different kinds of waveforms
- Determination of peak and RMS voltage
- Generation and study of Lissajous figures

$$V_{RMS} = 0.707 V_m$$

OBSERVATIONS:

a) MEASUREMENT OF VOLTAGE

S.NO	Actual voltage shown by power supply	Position of Vertical Amplifier (Control (Volts/cm)	Displacement D (cm)	Voltage V = D × Volts/cm volts	V_{rms}	Error%
1.	∿	0.5 V/cm	4.0	20	1.414	
2	⋀⋀	0.5 V/cm	3.8	19	1.343	
3	⊓⊓	0.5 V/cm	3.8	19	1.343	
4						

b) MEASUREMENT OF FREQUENCY OF AC VOLTAGE

S.No	Time Base (sec/div)	No of Horizontal Divisions (units)	Period, T (sec)	Frequency f (Hz)	Frequency read on dial of AC generator	Error %
1	1	3.2	3.2×10^{-3}	$\frac{1000}{3.2} = 212.5$	311.0	37%
2	1	3.3	3.3×10^{-3}	$\frac{1000}{3.3} = 303.03$	311.0	37%
3	1	3.2	3.2×10^{-3}	$\frac{1000}{3.2} = 312.5$	311.0	37%
4						

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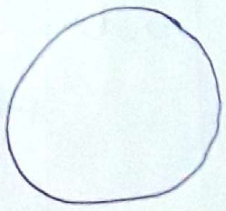
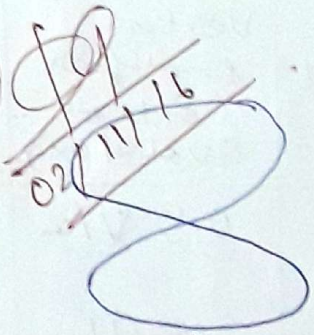
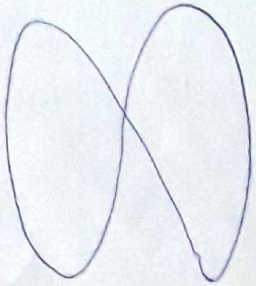
c)



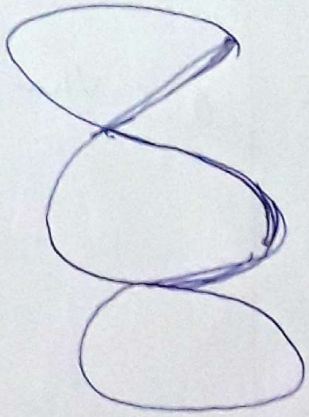
(a)



(b)



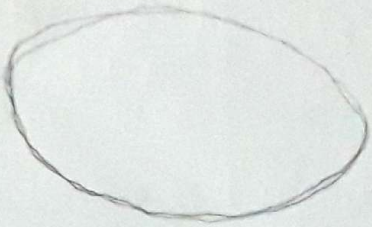
(C)



(d)

Lissajous figure for horizontal to vertical frequency ratios of (a) 1:1 (b) 2:1 (c) 1:2 & (d) 3:1

RESULT-



1:1

2:1

1:2

3:1

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