

SECTION A

Q1:- Attempt any **four** of the following :

1. Explain the working principle of PMMC Instruments.
2. A 0 to 10 amp meter has a guaranteed accuracy of 1.5% of full scale reading. The current measured by the instrument is 2.5 ampere calculate and percentage limiting error.
3. Explain the working principle of dc ammeter and dc volt meter.
4. The current passing through a resistor of $50 \pm 0.2\Omega$ is 4.0 ± 0.02 amp determine the limiting error in the computed value of power dissipation.
5. Explain the following errors :
 - (i) Gross error
 - (ii) Systematic error
 - (iii) Absolute error
6. Explain the working principle of series ohm meter.

SECTION B

Q2:- Attempt any **four** of the following :

1. Explain the working principle of transistor voltmeter circuit.
2. Explain the voltmeter and ammeter methods for resistance measurement.
3. Explain the following bridges:
 - (i) Wheatstone bridge
 - (ii) Capacitance bridge.
4. What is the principle of digital Multimeters?
5. What are the multi meter probes, for what purpose they are being used?
6. Explain the low resistance measuring instruments.

SECTION C

Q3:- Attempt any **two** of the following :

1. Explain all the techniques of A/D conversion with block diagram and explain each block.
2. Following readings were obtained in respect of the measurement of capacitor 0.996, 1.003, 0.998, 1.001, 1.009, 1.005, 0.996, 0.997, 1.008 and 0.994.
Calculate
 - (i) Average deviation
 - (II) Standard deviation.
3. Explain the alpha numeric display using LCD, LED specification of digital meters.

SECTION D

Q4:- Attempt any **two** of the following :

1. Explain the working principle of CRO with block diagram, explain each block and also explain the function of CRT. Calculate the f_y/f_x in following diagram.

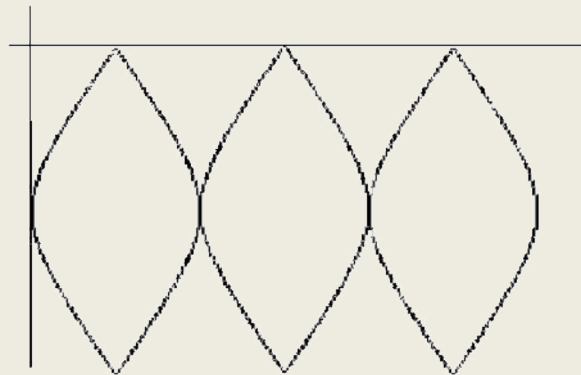


fig 1

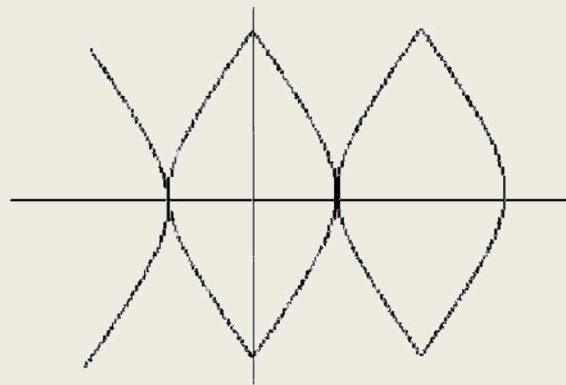


fig 2

2. Explain the sampling oscilloscope and Digital Storage Oscilloscope (DSO) and DSO Application.
3. Explain the different types of oscilloscope probes also the concept of frequency and phase measurements.

SECTION E

Q5:- Attempt any **two** of the following :

1. Explain the concept of ECG, EMI, EMC, and EEG and also explain the x-y recorders.
2. Explain the frequency synthesis techniques and also explain the digital signal generators.
3. Explain spectrum analyser and distortion methods and also explain the function of plotters.