

**DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION**

**AY 2021-22 (ODD Semester)**

**Class:EJ3I Course & Course Code: EMI- 22333**

**Assignment No. 1 (Chapter 1)**

**CO: C3-22333-1**

1.Define: (i) Absolute Instrument (ii) Secondary Instrument.(2) (L1)

2.State different types of errors in Instrument. (2) (L1)

3.State and explain different types of standards. (4) (L1)

4.Define calibration and state its need. (2) (L1)

5.Define : (i) Resolution (ii) Accuracy.(2) (L1)

6.Define any two dynamic characteristics of measurements. (2) (L1)

7.Define the term ‘Measurement’. (2) (L1)

8.Define accuracy and precision. Voltmeters (V1, V2, V3 and V4) are used to measure a voltage of 150 volts (true value). (4) (L3)

9.Define the following terms (i) Accuracy (ii) Precession (iii) Sensitivity (iv) Resolution(4) (L1)

10. Define calibration. Explain why calibration is needed for measuring instrument. (4) (L2)

11.Define the terms: i. Resolution ii. Dead Zone. (2) (L1)

12.Define sensitivity and reproducibility. (2) (L1)

13.Define precision and fidelity. (2) (L1)

14.Define error. Write the formula for absolute error and % error. Write the cause of any one type of error. (4) (L2)

**Assignment No. 2 (Chapter 1)**

**CO: C3-22333-2**

1.List applications of ohmmeter. (4) (L1)

2.Explain working principle of PMMC instrument with diagram(4) (L2)

3.Voltmeter never connected in series with source of emf. Justify it.. (4) (L2)

4.Compare Analog and Digital meters on: i) Principle ii) Accuracy iii) Resolution iv) Example(4) (L2)

5. (4) (L3)



6.Draw the block diagram of successive approximation type ADC.Draw the SAR register waveforms for unknown voltage . VX = σ volts. (4) (L2)

7.A 1 mA meters movement with an internal resistance of 100 Ω is to be converted into a 0- 100mA. Calculate the value of shunt resistance required. (4) (L3)

8.Give any two applications of LED and LCD each. (2) (L3)

9.Draw and explain working of half wave rectifier type AC voltmeter (4) (L2)

10.Convert the PMMC movement into a dc – ammeter of the range 0 to 100 mA. (4) (L3)

11.Explain the calibration of series type ohmmeter. (4) (L2)

12.Give the two advantages and two disadvantages of PMMC instrument. (2) (L2)

13. Define the relationship between deflecting torque (Td) and controlling Torque (Tc) (4) (L2)

14.Draw the circuit of DC voltmeter and derive the equation of series resistance. (4) (L2)

15.Draw the labeled block of dual slope integrating type DVM. State its operation. (4) (L2)

**Assignment No. 3 (Chapter 1)**

**CO: C3-22333-3**

1.State need of delay line in CRO. (2) (L2)

2.Draw labelled diagram of CRT. (2) (L1)

3.Explain spectrum analyzer with block diagram. (4) (L2)

4.Explain with sketch procedure to measure frequency and Amplitude using CRO. (4) (L2)

5.Draw the block diagram of DSO and explain function of each block(4) (L2)

6.Sketch Block diagram of vertical deflection system used in CRO. (2) (L1)

7.Describe the block diagram of function generator.(4) (L2)

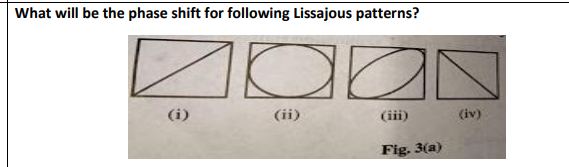
8.Calculate the frequency of channel -1 input for an oscilloscope when shows the following Lissajous patterns. Assume the channel – 2 frequency 15kHz. (4) (L3)

9.Compare CRO and DSO. (ii) State the formula for phase measurement using CRO with necessary diagram. (L2)

10.State significance of Lissajous figure. (2) (L2)

11.Draw block diagram of CRO and explain function of each block of it(4) (L2)

12. (4) (L2)



13.Suggest instrument to measure unknown frequency above 5 MHz and store result. Justify it. (4) (L2)

14.For the waveform shown in Fig 6(b) if vertical attenuation is 3mV/div. (4) (L2)

15.List any four applications of CRO. (2)

16.Draw a block diagram of dual beam CRO. (2) (L1)

17.Explain operation of dual trace CRO, with neat block diagram(4) (L2)

18.The Lissajous pattern observed on CRO is as shown in figure. Calculate the vertical input frequency if horizontal input frequency is 1500Hz. (4) (L3)

19.State the functions of delay line. (2) (L1)

20.List out any four front panel control of basic CRO with their functions(4) (L2)

21.Describe the methods of measurement using CRO: i. Voltage measurement. ii. Current measurement. iii. Time period measurement. iv. Frequency measurement.(4/6) (L2)

22..Write the formula for frequency measurement and phase measurement with lissajeous figure. (4) (L1)

**Assignment No. 4 (Chapter 1)**

**CO: C3-22333-4**

***----------------------------------------------------------------------------------------------------***

1.State selection criteria of transducer. (4) (L1)

2.Describe the working principle of Piezo-Electric Transducer. (4) (L2)

3.Identify Active and Passive transducers from: RTD, Piezoelectric transducer, Strain gauge, LVDT. (4) (L1

4.Describe function of each block of Instrumentation system. (4) (L2)

5.Write any two applications of Instrumentation System. (2) (L1)

6.Define : (i) Sensor (ii) Transducer(2) (L1)

7.List any four types of transducer. (2) (L1)

8.Write one example and application of thermal, optical, magnetic and electric sensor. (ii) State four selection criteria of transducer. (4) (L1)

9\*.Define transducer. Give two examples of transducer. (2) (L1)

**Assignment No. 5 (Chapter 1)**

**CO: C3-22333-5**

1.State the meaning of PT-100. (2)

2.Compare Bourdon tube with Bellows. (4)

3.State and explain Seeback and Peltier effects. (4)

4.Explain working principle of Electromagnetic flow meter. ii) Explain procedure to measure humidity using hygrometer. (4)

5.Explain the working of LVDT with neat diagram. ii) Compare LVDT with RVDT. (4/6)

6.State need of level measurement. (2)

7.Explain the sketches , the working principle of Bourdon tube(4)

8.Compare thermistor and thermocouple(4)

9.Explain the electro-magnetic flow meter with neat sketch and write it’s application. (4)

10.State the principle of Humidity measurement using hygrometer. (ii) State the type of humidity measurement and range with it. (4)

11.Describe working principle of radiation level measurement with neat diagram. (4)

12 .Sketch and describe pressure measurement system for 800 mm pressure, that contain Bourdon tube and LVDT. (4)

**Assignment No. 6 (Chapter 1)**

**CO: C3-22333-6**

***----------------------------------------------------------------------------------------------------***

1.Differentiate AC and DC signal conditioning. (4)

2.Explain block diagram of AC signal conditioning. (4)

3.State need of signal conditioning. ii) Explain with sketch function of each block of Data Acquisition System (DAS). (4)

4.Write objective of Data acquisition system(2)

5.Define signal conditioning system. (ii) Draw the circuit diagram of DC signal conditioning circuit. (4)

6.Draw and describe general Data acquisition system . (4)

7.List the applications of DAS.(2)