33042 – MEASUREMENTS AND INSTRUMENTS

UNIT – I CLASSIFICATION AND CHARACTERISTICS OF INSTRUMENTS

PART-A & PART-B QUESTIONS:

1. What are the Functions of measurement systems?
2. What is Absolute Instrument? Give any one example.
3. Discuss about the types of Secondary instruments.
4. Compare Absolute and Secondary instruments.
5. Define Instrument Efficiency and True value.
6. Define Accuracy and Error.
7. State any two examples for recording type instruments.
8. Explain briefly any Three Effects used in instruments.
9. Discuss about any three types of Supports.
10. Write short notes on Gravity control
11. What are the different types of Effects used in an Instrument?
12. Define Precision and Error correction.
13. What is the Material used for magnet?
14. Mention the Instruments that measure Electrical quantities in terms of meters constant without comparison with other similar meters.
15. Mention the types of operating Forces.
16. What will happen, if there is no control Torque in instruments?
17. What are two Essential requirements of a moving system?
18. What is ability of Instrument to give consistently Equal ratings?
19. What is the main function of measurement systems?
20. Explain Torque-weight ratio.

PART-C QUESTIONS:

1. Explain about Different operating Forces in instruments.
   (OR)
   Explain the various operating Forces of an Indicating Instrument.
2. Explain about Two methods of Control system in Instruments.
3. Explain the various types of Supports used in Indicating instruments with a neat sketch.
4. Describe with neat sketches, the various methods of Damping.
5. State the various Effects used for measurement in Instruments and Explain.
6. a) State and explain the classification of Instruments and give one example for each.
   b) Explain Balancing, Torque/Weight Ratio and supports for moving system.
7. a) Explain Analog and Digital instrument with suitable sketch.
   b) Comparison between Air Friction, Fluid Friction and Eddy current Damping.
8. a) Explain the constructional details of Indicating instrument.
   b) Compare Analog and Digital Instruments.

UNIT – II MEASUREMENT OF CURRENT, VOLTAGE AND RESISTANCE

PART-A & PART-B QUESTIONS:

1. What are the two types of MC instruments?
2. What is Multiplier? What is Shunt?
3. How Resistance can be classified?
4. What is the Relation between Ɵ and I in an attraction type MI instruments?
5. Mention the Types of Instrument transformers.
6. Mention the use of MEGGER. Name the coils are used in megger.
7. Compare moving coil and moving iron instruments.
8. Explain why a PMMC meter can't be used for AC measurements.
9. Write about any three characteristics of C.T
10. Define Ratio error and phase angle error in current transformers.
11. What is Multimeter? Draw the ammeter circuit connection in multimeter.
12. Mention the Application of Tong tester and state it use.
13. What are the types of Electro static voltmeter?
14. What is the Applications of Rectifier type instrument?
15. Why moving iron instruments can be used for both AC and DC measurements?
16. What are advantages and disadvantages of MI instruments?
17. What are Requirement's of Shunt and Multiplier?
18. What are the two types of Moving coil instruments?

PART-C QUESTIONS:

1. Describe with neat sketch, the construction and working of Attraction type moving iron instrument.

   (OR)

   Explain about the working and Torque equation of any one Moving iron instruments.
2. Explain the construction and working of Repulsion of any one moving iron instruments with neat sketch.
3. Explain with neat sketch, the construction working and theory of Permanent Magnet Moving Coil (PMMC) instrument.
4. Explain about potential transformer in details.
5. Explain with a sketch, the construction and working of Earth tester.
6. Draw the circuit diagram of Wheatstone bridge and derive the formula to find the medium Resistance.
7. Explain how the Range of Ammeter can be extended.
8. With a neat sketch and Explain Dynamometer type moving coil meter.
9. With a neat sketch and explain Tong tester. State its applications.
10. Draw the circuit diagram of Kelvin's bridge ohmmeter and write the formula to find low resistance.
11. With neat sketch explain the construction and working of Megger.
12. Explain testing methods of C.T and P.T
13. With a neat sketch and explain Shaded pole instrument.

UNIT – III MEASUREMENT OF POWER AND ENERGY

PART-A & PART-B QUESTIONS:

1. Differentiate Active power and Reactive power in AC Circuits.
2. Expand RSS meter. What is it's uses?
3. What is the purpose of copper shading bands in Energy meter?
4. Define Digital Energy meter.
5. Define Power and Energy.
6. Discuss about any three Errors in Energy meter.
7. Draw the sketch of LPF Meter.
8. What is Creep in Energy meters? What are its causes?
9. What is the Advantages of Dynamometer type wattmeter?
10. List the different Errors in an Energy meter.
11. List the four operating mechanism in AC Energy meter.
12. What is the purpose of Lag plate in Energy meter?
13. Draw the circuit diagram of 2 elements 3 phase wattmeter.
14. Explain two methods of connecting a wattmeter in a circuit.
15. Which types of Instruments are Energy meters?

PART-C QUESTIONS:

1. Explain about the operation of Electro Dynamometer type wattmeter in detail. Also mention its advantages.
2. Explain about the operation of 3Φ energy meter.
3. Draw a neat sketch and explain the constructional details of single phase Induction type Energy meter.
4. Explain the Low power factor wattmeter with a neat sketch.
5. Explain the construction and working principle of 3 phase wattmeter.
6. What are the Errors in Energy meter? How are they minimized?
7. Explain briefly about the calibration of energy meter using RSS meter.
8. Describe with a neat sketch the working of VAR meter to measure Reactive power.

UNIT – IV MEASUREMENT OF POWER FACTOR, FREQUENCY AND PHASE DIFFERENCE

PART-A & PART-B QUESTIONS:

1. Mention the types of phase sequence Indicator.
2. What is Maximum demand indicator? Mention the advantage and Disadvantage of Merz price max.demand Indicator.
3. What are the three Quantities measured by Trivector meter.
4. Explain the working of Rotating type phase sequence indicator.
5. What are the types of Frequency meter.
6. What are the conditions to be satisfied for the parallel operation of two alternators?
7. What are the types of power factor meter? And what is the use of power Factor meter?
8. What is synchroscope? Write the use of synchroscope.
9. What are the two types of synchroscope.

PART-C QUESTIONS:

1. What is the use and types of synchroscope? Explain any one type in detail.
2. a) Describe with a sketch, the construction and working of single phase Dynamometer type power factor meter.
   b) Describe with a sketch, the construction and working of Three phase Dynamometer type power factor meter.
3. Explain the construction and working of phase sequence Indicator with a neat sketch.
4. Explain the construction and working of Merz – price maximum demand indicator with a neat sketch.
5. What is Frequency meter? Explain in detail about Weston frequency meter.
6. Draw the Block diagram of Digital Frequency meter. Explain its operation.
7. With the neat sketch and explain Trivector meter.
8. With a neat sketch explain construction and operation of Weston synchroscope.

UNIT – V - MEASUREMENT OF L, C AND WAVE FORMS

PART-A & PART-B QUESTIONS:

1. Mention any Two applications of CRO
2. Explain about the operation of Schering bridge
3. What is the use of Anderson's Bridge?
4. Write the names of Fluorescent materials used in CRO screen.
5. Name the bridge used for the measurement of Capacitance.
6. What is Expansion for CRO?
7. What is the use of Maxwell's bridge?
8. What is the main use of Digital storage oscilloscope?
9. What is a CRT?
10. Write the coating material for CRT screen.
11. Name the bridge used for the measurement of Inductance.

PART-C QUESTIONS:

1. Explain in detail about cathode ray tube.
2. Explain about Dual Trace CRO with suitable sketch.
3. Explain the working of CRO with a bloc diagram.
4. Draw the circuit diagram of Anderson Bridge to find the unknown Inductance.
5. Explain the working principle of Schering bridge.
6. a) Write a short notes on i) Electron gun ii) Deflecting plates iii) Fluorescent screen.
   b) Explain the working principle of Maxwell's Bridge.
7. a) List the various applications in CRO and explain.
   b) Explain Time Base and Synchronization.
8. Draw the Block diagram of Digital Storage Oscilloscope and Explain.