

Scheme – G
Sample Question Paper

Course Name : Electronics Engineering Group

Course Code : DE/ED/EI/EJ/EN/ET/EX/IC/IE/IS/IU/MU

Semester : Third

Subject Title : Electronics Instruments and Measurements

Marks : 100

17317

Time:03 Hrs

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q1. A. Attempt any SIX

12 Marks

- a) Define Accuracy
- b) Draw the schematic diagram of D'Arsonval movement
- c) What is represented by the terms "3&1/2 digit" and "1/2 digit" with reference to voltmeter?
- d) State which section of DMM decides Resolution?
- e) State the function of delay line in CRO?
- f) List four important front panel controls of CRO
- g) What is Signal generator?
- h) State two applications of Spectrum analyzer

Q1. B. Attempt any TWO

08 Marks

- a) Define Error? Describe gross error and systematic error.
- b) Compare Absolute Instruments and Standard Instruments.
- c) How to connect Ammeters and Voltmeters in Electrical circuits? Give Justification.

Q2. Attempt any FOUR

16 Marks

- a) Define calibration. Explain why calibration is needed for Measuring Instruments
- b) Draw the block schematic of single trace CRO. State function of each block.
- c) State how DSO stores waveforms? List its advantages.
- d) Draw and describe the horizontal deflection system in CRO.
- e) How the electron beam generated in CRT? Sketch suitable diagram
- f) Write the procedure for frequency and Phase of signal is measurement by CRO?

Q3. Attempt any FOUR

16 Marks

- a) Define Standard. What are the different standards used for Instrument calibration?
- b) What is Loading effect and voltmeter sensitivity of multi range Voltmeter?
- c) Calculate the value of series resistance, if we use 10 mA, 50Ω movement as 10 V full scale Voltmeter.

- d) State and describe the different types of triggering available in CRO?
- e) With neat labeled block diagram state how distortion factor meter operates?
- f) What is spectrum analyzer? How it can be used for Harmonic Analysis?

Q4. Attempt any FOUR

16 Marks

- a) Explain with circuit diagram how half wave rectifier type analog AC voltmeter is used to measure unknown voltage?
- b) Derive the torque equation for PMMC instruments.
- c) Calculate the value of series resistance, if we use 10 mA, 50Ω movement as 100mA full scale ammeter
- d) Draw and state how the Ayrton shunt type DC ammeter operates?
- e) Draw the electrical circuit diagram of full wave rectifier type AC voltmeter. State its advantages.
- f) Draw neat electrical circuit diagram of analog multimeter.

Q5. Attempt any FOUR

16 Marks

- a) Draw neat diagram of CRT. State the function of accelerating anode.
- b) Draw the neat block diagram of dual beam dual trace CRO and state functions of each blocks.
- c) Draw block diagram of function generator and write how square and triangular signals are generated?
- d) Draw and describe the circuit diagram of pulse generator.
- e) Draw block diagram of pattern generator and how different patterns are generated using pattern generator?
- f) Describe the working of frequency selective wave analyzer.

Q6. Attempt any FOUR

16 Marks

- a) Write the operation of frequency meter with block diagram.
- b) Draw the block diagram of ramp type digital type voltmeter. State the function of ramp generator and control unit.
- c) Draw the block diagram of digital multimeter. State its advantages.
- d) What is LCR meter? How the inductance, capacitance and resistance is measured using it?
- e) Draw block diagram of Q-meter and state functions of each block.
- f) Compare analog instruments with digital instruments.