

Scheme – E
Sample Question Paper

Course Name : Electronics Engineering Group

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

Semester : Fourth

Subject : Electronics Instruments and Measurements

Marks : 100

12117

Time: 03 Hours.

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 orders.

Q.1 a) Attempt any SIX of the following:

12 Marks

- a. Define i) Reproducibility ii) Precision
- b. Why static error and dynamic error occurs?
- c. State the classification of standards.
- d. State the role of delay lines in the block diagram of C.R.O
- e. Define accuracy, sensitivity of digital display
- f. State two advantages of PMMC movement.
- g. Draw basic DC ammeter using D'Arsonval movement.
- h. State the classification of standards.

Q.1 b) Attempt any TWO of the following:

08 Marks

- a. State the meaning of Grounding. Why is it necessary?
- b. Draw the diagram of PMMC movement. Write the equation for the developed torque.
- c. Distinguish between accuracy and precision.

Q.2 Attempt any FOUR of the following:

16 Marks

- a. Draw the neat circuit multirange DC voltmeter. Explain it measures different voltages.
- b. Draw the circuit of basic Q meter. Describe its working.

- c. Draw the labelled block diagram of ramp type DVM. State its advantages and disadvantages.
- d. State working principle of dual slope DVM and single slope DVM.
- e. Draw the circuit of rectifier type AC voltmeter. Describe its working.
- f. Convert a basic D'Arsonval movement with an internal resistance of 50 ohm and full scale deflection current of 2mA into multirange dc voltage with voltage ranges of 0-10v, 0-50v, 0-100v and 0-250v.

Q.3 Attempt any FOUR of the following:

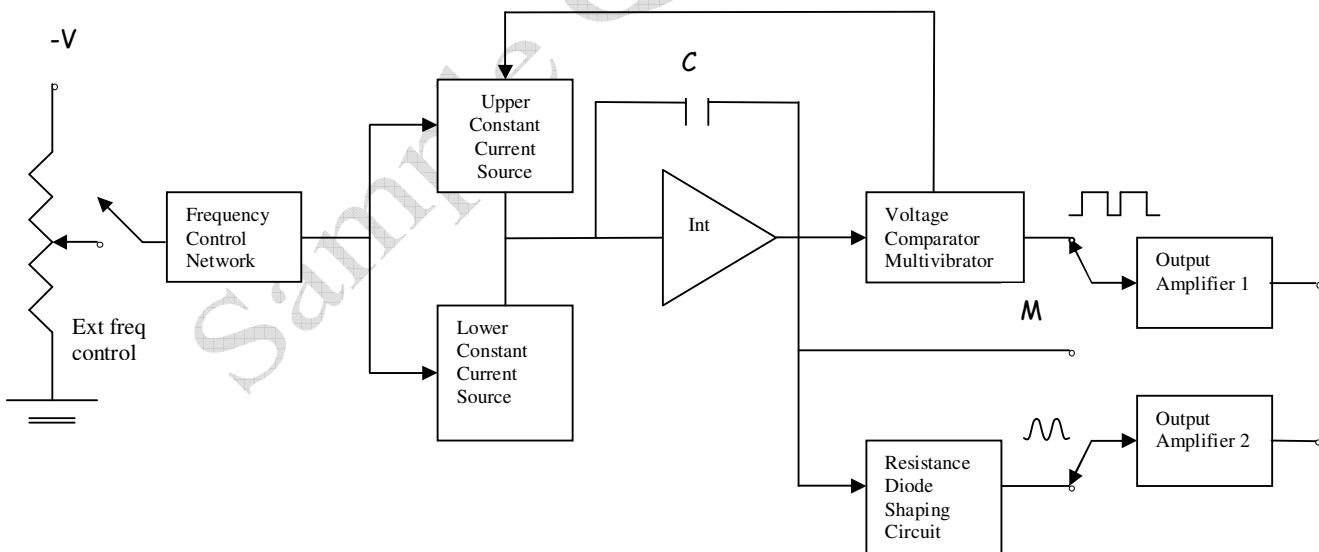
16 Marks

- a. Draw the block diagram of digital frequency meter. Explain its principle of operation.
- b. Draw the labeled block diagram of dual trace oscilloscope.
- c. Draw the labeled block diagram of logic analyzer.
- d. Draw the block diagram of standard signal generator and explain it.
- e. Draw the labeled block diagram of AF sine wave and square wave generator. Describe its operation
- f. Draw and explain working of CRT of CRO.

Q.4 Attempt any FOUR of the following:

16 Marks

- a. Identify the following block diagram. Explain the function of each blocks.



- b. Draw the block diagram of Digital phase meter. State the principle of operation of it.
- c. Draw AM waveform which is observed on ordinary CRO and spectrum CRO.

- d. Draw block diagram of spectrum analyzer. Describe it.
- e. Draw integrating type digital voltmeter.

Q.5 Attempt any TWO of the following:

16 Marks

- a. Draw block diagram of pulse generator.
- b. Draw the block diagram of CRO. Explain working of each block.
- c. Draw the block diagram of successive approximation type DVM. Explain the working & why it is called so?

Q.6 Attempt any FOUR of the following:

16 Marks

- a. What are advantages of active probe? Draw the circuit of active probe using FET Trace CRO.
- b. Distinguish between single trace and dual trace CRO.
- c. What is loading effect of instrument?
- d. Explain how frequency can be measured on CRO using Lissajous pattern?
- e. Define Average and RMS value w.r.t. analog instruments
- f. Draw labeled diagram of vertical amplifier section of CRO.