17317

11920

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any SIX : **12**

(a) Classify measuring instrument.

(b) Draw construction diagram of PMMC.

(c) State application of digital frequency meter.

(d) State two advantages of digital instrument.

(e) List different types of CRO probes.

(f) State two applications of DSO.

(g) State need of signal generator.

(h) State two uses of logic analyser.

(B) Attempt any TWO : **8**

(a) Define calibration. State need of calibration.

(b) Define accuracy, precision, resolution and sensitivity.

(c) Draw diagram of analog multimeter.

2. Attempt any FOUR : **16**

(a) What is use of standard ? Explain different standard.

(b) Explain function of delay line in CRO.

(c) Draw the construction of CRT. Write two material used for CRT display screen.

(d) Explain measurement of frequency and amplitude using CRO.

(e) Draw block diagram of dual beam dual trace CRO.

(f) State and describe different types of triggering available in CRO.

3. Attempt any FOUR : **16**

(a) Define error. Describe gross and systematic error.

(b) Calculate series resistance for 10 mA, 50 Ω movement to be used as 10 V full scale voltmeter.

(c) Derive torque equation for PMMC instrument.

(d) Explain measurement of phase and frequency using Lissagous pattern.

(e) Draw block diagram of RF signal generator and explain its operation.

(f) Draw and describe circuit diagram of pulse generator.

4. Attempt any FOUR : **16**

(a) Draw the block diagram of successive approximation type digital voltmeter. Explain its working.

(b) What is LCR meter ? Explain measurement of resistance and inductance using LCR meter.

(c) Draw and explain Ayrton shunt type DC Ammeter.

(d) Draw electrical circuit diagram of half wave rectifier type AC voltmeter. State its advantages.

(e) Derive equation of shunt resistance for DC Ammeter.

(f) Draw connection diagram of ammeter and voltmeter in electric circuit. Give justification.

5. Attempt any FOUR : **16**

(a) Draw and explain block diagram of CRO.

(b) State how DSO stores waveform. List its advantages.

(c) What is video pattern generator ? State any two pattern with their uses.

(d) Draw block diagram of spectrum analyser. State applications of it.

(e) Draw block diagram of distortion factor meter and explain its operation.

(f) Draw block diagram of wave analyser and state its need.

6. Attempt any FOUR : **16**

(a) Explain loading effect of voltmeter.

(b) Design multi-range DC ammeter (shunt type) for Rm = 100 Ω, Im = 1 mA and required current ranges are 0 – 50 mA, 0 – 100 mA and 0 – 200 mA.

(c) Compare analog and digital meters.

(d) Draw block diagram of Q-meter and state function of each block.

(e) Draw block diagram of digital frequency meter. State its working principle.

(f) Draw block diagram of digital multimeter. State its advantages over analog multimeter.
