22331

12425

03 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

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

(3) Illustrate your answer 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. Attempt any FIVE of the following: **10**

a) State functions of:

i) Electron gun

ii) Phosphor screen.

b) Classify the instruments.

c) List specifications of digital voltmeter. (Any two)

d) List the applications of PMMC meter. (Any two)

e) State the function of delay line in CRO.

f) List different types of CRO. List any two applications of CRO.

g) Define resolution of DVM.

P.T.O.

Marks

2. Attempt any THREE of the following: **12**

a) Explain the working of PMMC instrument.

b) Explain the operation of a digital frequency meter with a neat labelled diagram.

c) Explain how time period and frequency can be measured using CRO.

d) Explain the procedure to measure unknown inductance using Hay's bridge with neat circuit diagram.

3. Attempt any THREE of the following: **12**

a) Define calibration and state its need.

b) Draw the circuit diagram of conversion of PMMC to multirange current meter. Derive equation for shunt resistance.

c) Explain spectrum analyzer with neat block diagram.

d) Explain the significance of Lissajous pattern with appropriate example.

4. Attempt any THREE of the following: **12**

a) Draw and explain LCR meter with neat block diagram.

b) Draw the basic block diagram of signal generator and explain the function of each block.

c) Compare analog instruments and digital instruments. (Four points)

d) Explain series type Ohmeter with neat diagram.

e) Draw neat and labelled diagram of cathode ray tube (CRT).

5. Attempt any TWO of the following: **12**

a) Explain the working of Wheatstone's bridge with neat circuit diagram and state which parameter can be measured using Wheatstone's bridge.

b) Write two specifications of analog multimeter. Also convert to PMMC movement into DC voltmeter of the range 0 to 100 MV.

c) Draw and explain block diagram of DSO.

Marks

6. Attempt any TWO of the following: **12**

a) Draw and explain the operation of successive approximation type DVM. (Assume SAR register as a 3 bit)

b) Describe the classification of the characteristics of instruments and define following characteristics:

i) Accuracy

ii) Error

iii) Fidelity

iv) Lag.

c) Draw neat and labelled diagram of full wave rectifier and explain the working of it.
