17317

14115

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

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

Marks

1. Attempt any <u>FIVE</u> of the following: **20**

a) Define the following terms:

(i) Accuracy

(ii) Precession

(iii) Sensitivity

(iv) Resolution

b) Define calibration. Explain why calibration is needed for measuring instrument.

c) Give the two advantages and two disadvantages of PMMC instrument.

Marks

d) Compare analog and digital meter on the basis of:

(i) Display

(ii) Resolution

(iii) Function available

(iv) Power consumption

e) List any four application of CRO.

f) List any four specification of function generator.

g) Explain the concept of time domain and frequency domain.

2. Attempt any <u>FOUR</u> of the following: **16**

a) Draw and explain working principle of Shunt Resistance Ammeter.

b) Draw and explain block diagram of Digital Frequency Meter (DFM)

c) Design a multi range DC ammeter using a basic movement with an internal resistance $R_m = 50\Omega$, and a full scale deflection current I_m = L mA. The range required are 0–10 mA, 0–50 mA, 0–100 mA, 0–500 mA.

d) State how DMM can be used as for continuity test. Which section decides resolution in DMM.

e) Compare between single trace CRO and dual trace CRO.

f) Draw block diagram of logic analyzer. Give any two application of logic analyzer.

Marks

3. Attempt any <u>FOUR</u> of the following: **16**

a) Draw the neat block diagram of pulse generator. List any four specification of pulse generator.

b) Draw the circuit of time base generator of single trace CRO. Describe its working.

c) Explain the method of Q-measurement with its block diagram.

d) Draw and explain operation of Electronic AC voltmeter (Average Responding)

e) Define the term standard. State types of standard.

f) Define the term:

(i) Sensitivity of voltmeter

(ii) Load effect of voltmeter

4. Attempt any <u>FOUR</u> of the following: **16**

a) Define the relationship between defelecting Torque (Td) and controlling Torque (Tc)

b) With neat sketch explain working principle of PMMC.

c) State any four application of logic analyzer.

d) Draw a neat labelled diagram of CRT.

e) Draw the circuit diagram of rectifier type AC voltmeter and explain.

f) What is grounding? Why it is provided?

Marks

5. Attempt any FOUR of the following: **16**

a) Draw block diagram of a digital Multimeter. State function of each block.

b) Draw neat labelled diagram of CRO.

c) Sketch block diagram of RF signal generator. Which type of signal can be generated from RF generator.

d) State types of CRO probe. How current probe operates.

e) Calculate the value of the multiplier resistance on the 50 V range of a dc voltmeter that uses a 200 μA meter movement with an internal resistance of 100 Ω.

f) Draw block diagram of DSO. State function of each block.

6. Attempt any FOUR of the following: **16**

a) List out any four specification of function generator.

b) With neat diagram explain horizontal amplifier in CRO.

c) Write your specification of DMM.

d) Draw and state how the Ayrton shunt type D.C. ammeter operates.

e) What is loading effect in multi range voltmeter?

f) List any eight specification of CRO

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