This question paper contains **3** printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **6857**

Unique Paper Code : **222361** **D**

Name of the Paper : **Electronics Instrumentation (ELPT-303)**

Name of the Course : **B.Sc. (Physical Science)**

Semester : **III**

Duration : **3 Hours** Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt any *Five* questions.

1. (*a*) Describe the working of d' Arsonval meter movement ? Explain how it can be modified to work as ammeter and hence find a relation between the internal resistance (R_m) and shunt resistance (R_s). 8

(*b*) What values of shunt resistances are required for using a 50 μA meter movement with an internal resistance of 5 kΩ for measuring 100 μA and 500 μA ? 4

(*c*) What basic precautions should be taken while using an ammeter ? 3

P.T.O.

2. (*a*) Discuss the working of ramp type digital voltmeter with the help of block diagram. 8

(*b*) Explain the working of a series-type ohmmeter. Deduce the expressions for current-limiting resistor and zero-adjust resistor used. 7

3. (*a*) Draw the block diagram of a CRO and briefly explain the function of each block. 9

(*b*) Explain the following terms :

(*i*) Fluorescence

(*ii*) Phosphorescence

(*iii*) Aquadag. 6

4. (*a*) Discuss the electrostatic focussing system of a CRT. 5

(*b*) Show that for a given accelerating voltage E_a and for particular dimensions of CRT, the deflection of electron beam is directly proportional to the deflecting voltage indicating CRT to be a linear device. Derive the deflection sensitivity of CRT. 10

5. (*a*) Draw the block diagram of Vertical Deflection System of a CRO and describe the function of each of its components. 12

(*b*) What is the need for a trigger circuit in a CRO ? 3

6. (*a*) Draw the circuit diagram and explain how a square wave is generated using an Astable multivibrator. Also explain the term duty cycle, rise and fall time. 12

(*b*) Draw the block diagram of sweep frequency generator. 3

7. Write short notes on any *two* : 7½,7½

(*i*) Transducers and their applications

(*ii*) Lissajous patterns and their significance

(*iii*) Delay lines

(*iv*) Sampling Oscilloscope.