7. Write short notes on the followings : (5,5)

(a) Digital storage Oscilloscope

(b) Digital multimeter

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1353 **C**

Unique Paper Code : 32223901

Name of the Paper : Basic Instrumentation Skills

Name of the Course : **B.Sc Prog CBCS_SEC (Prog / Hons)**

Semester : V/III

Duration : 3 Hours Maximum Marks : 50

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions in all. **All** questions carry equal marks.
3. Use of non-programmable scientific calculator is permitted.

1. (a) Describe the static characteristics of an instrument. Explain the difference between accuracy and precision of a measurement with an example.

P.T.O.

(b) What is limiting error? A voltmeter reads 70 V on its 100 V range and an ammeter reads 80 mA on its 150 mA range are used to determine the power dissipated in a resistor. Both these instruments are guaranteed to be accurate within ±1.5% at full scale deflection. Determine the limiting error of the power. (5,5)

2. (a) Explain the principle of voltage measurement of an ac millivoltmeter with block diagram. A basic D'Arsonval movement with a full-scale deflection of 200 μA and internal resistance of 100 Ω is used as a voltmeter. Determine the value of the multiplier resistance needed to measure a voltage of range 0-50 V.

(b) Explain the operation of full wave rectifier type AC voltmeter with a suitable diagram. (5,5)

3. (a) Draw the block diagram of a Cathode Ray Oscilloscope (CRO) and explain the functions of each block.

(b) Distinguish between dual beam and dual trace CRO. (5,5)

4. (a) Explain the operation of Schering bridge to determine the unknown Capacitance and also derive the relevant balancing equations.

(b) A Wein bridge at balance has the following components given as: R1 = R2 = 820 Ω, C1 = 0.2 μF, C2 = 0.4 μF, and R3 = 1.5 k Ω. Determine the frequency of the bridge. (5,5)

5. (a) Describe the working of a Q-meter for measurement of high impedance value.

(b) What is distortion factor meter. Explain its working. (5,5)

6. (a) Draw the block diagram of a pulse generator and explain its operation.

(b) What is a universal counter? How can it be used to measure the frequency, time and period. (5,5)

P.T.O.