

Seat No. : \_\_\_\_\_

**AG-127**

**April-2015**

**B.Sc., Sem.-VI (CBCS)**

**Phy-311 : Physics (Elective) (Sec-A)  
Experimental and Measurement Techniques**

**Time : 3 Hours]**

**[Max. Marks : 70**

- Instructions :** (1) Attempt **all** the questions.  
(2) Symbols used have their usual meaning.

1. (a) Discuss in detail about the Parent Distribution Function. 7

**OR**

Ten repeated measurements of a resistance are 12.25  $\Omega$ , 10.11  $\Omega$ , 11.12  $\Omega$ , 12.23  $\Omega$ , 10.67  $\Omega$ , 14.50  $\Omega$ , 12.12  $\Omega$ , 13.34  $\Omega$ , 13.65  $\Omega$ , 12.26  $\Omega$ . Find out mean value, deviation and standard error in resistance.

- (b) Explain the briefly 'random error'. 7

**OR**

Write a short note on 'Systematic error'.

2. (a) Explain temperature transducer. 7

**OR**

Explain transducer characteristics : (1) Hysteresis (2) Nose (3) Response time.

- (b) Write a short note on thermistor. 7

**OR**

Write a short note on semiconductor temperature sensor.

3. (a) Discuss in detail about Turbomolecular pump and Adsorption pump. 7

**OR**

Write a short note on capacitance gauge and ionization gauge.

- (b) Write a short note on Vacuum pump. 7

**OR**

What is pump speed ? Obtain the equation of pumping speed.

4. Attempt any **two** questions : **14**
- (1) Explain the Binomial Distribution.
  - (2) Write a short note on infra-red pyrometers and optical pyrometers.
  - (3) Discuss about construction of vacuum equipment.
  - (4) Give the application of vacuum.
5. Answer the following short questions : **14**
- (1) What is the dimensional formula of charge ?
  - (2) How many significant figures are in these numbers (a) 234.12 (b) 12.0023 ?
  - (3) What is error ?
  - (4) What is unit of temperature coefficient ?
  - (5) Define uncertainty.
  - (6) Write down equation of Poisson distribution function.
  - (7) Define signal/noise ratio.
  - (8) What is the value of Boltzman's constant ?
  - (9) What is dead time ?
  - (10) Give the full form of RTD.
  - (11) What is value of emissivity of stainless steel ?
  - (12) Define the temperature.
  - (13) What is the perfect gas ?
  - (14) A photo detector area light of wavelength 140 nm to find band gap energy of photo detector.
-