

**U.G. 6th Semester Examination-2022****PHYSICS****[HONOURS]****Discipline Specific Elective (DSE)****Course Code : PHY-H-DSE-T-04****(Experimental Technique)**

Full Marks : 40

Time :  $2\frac{1}{2}$  Hours*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any **five** questions :  $2 \times 5 = 10$
- What is meant by accuracy and precision?
  - What is Thermocouple?
  - What is S/N ratio?
  - A steel scale is graduated in increments of  $1/32$  cm. What is the readability and least count of such a scale?
  - Write down two advantages of Electrostatics shielding.
  - Write briefly on Penning gauge.

- What is mean free path?
- What is Electromagnetic Interference?

2. Answer any **two** questions :  $5 \times 2 = 10$
- Write down the characteristics of transducers and its uses as electrical element.
  - What is RTD? What are RTD used for? Name two types of RTD.
  - A thermometer is used for the range of 200 to 400°F. and it is stated that its accuracy is one-quarter of 1 percent. What does this mean in terms of temperature? Describe the meaning of phase shift.
  - What is Peltier and Seebeck effect?
3. Answer any **two** questions:  $10 \times 2 = 20$
- Briefly discuss the principle of Gas filled detector.  $10$
  - What are the advantages and disadvantages of Diffusion pump and Turbo Modular pump? What is the working principle of temperature sensors and its applications?  $5+5$
  - Draw the block diagram and working principles of RLC bridge. What are Inherent fluctuations, Noise figure. Thermal noise, Shot noise.  $1/f$  noise?  $5+5$

*[Turn Over]*

d) Write short notes on: 5+5

i) Static and dynamic characteristics of measurement systems

ii) Analog and Digital instruments

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