April 2017

PHY-232

गुरु - 014 / 015

B) Instrumentation - I (231203)

Time : Two Hours **Max. Marks : 60**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Graph or diagram should be drawn with the black ink pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory and carry equal marks.
5. Figures to the right indicate full marks.
6. Draw neat and labelled diagram wherever necessary.
7. Use of logarithmic table or standard electronic calculator is allowed.

1. a) Attempt **any six** of the following select the correct option and rewrite the following. **6**

1) Acoustics is the branon of physics studying ----------.

a) Light b) Heat

c) Sound d) Motion

2) In PTC thermistor, as ----------.

a) Temperature increases resistance decreases

b) Temperature increases resistance increases

c) Temperature decreases resistance increases

d) None of these

3) A Hall probe is used to determine ----------.

a) Magnetic moment of the coil

b) Susceptibility of a material

c) Relative permittivity

d) Magnetic flux density

4) If the velocity is greater than the critical value, the flow of liquid does not remain steady, is called ----------.

a) Streamline flow b) Turbulent flow

d) Continuons flow d) None of these

5) Selective pyrometer works on the principle of ----------.

a) Planck's law b) Boyle's law

c) Kirchhoff's law d) None of these

6) Errors are classified as systematic error and ----------.

a) Random error b) Actual error

c) Both a) and b) d) None of these

7) Venturi tube is used for measurement of ----------.

a) Flow b) Resistance

c) Temperature d) None of these

8) Pressure is defined as ---------- per unit ----------.

a) Force, area b) Height, area

c) Length, height d) output, input

b) Attempt **any six** of the following. **6**

1) What is an error?

2) Define Hall effect.

3) What are the units of vacuum measurement?

4) Define accuracy.

5) State the principle of constant volume thermometer.

6) Define sound power level.

7) What is the principle of electrodynamic microphone.

8) State the Seebeck effect.

2. Attempt **any six** of the following. 12

1) Give the classification of flow meters.

2) What is the principle of Pirani gauge?

3) State the different methods to measure magnetic field.

4) Mention the different scales of pressure measurement.

5) Enlist different types of calibration.

6) Enlist different temperature measurement methods.

7) Which materials are selected for thermocouples?

8) What is microphone?

9) What are the limitations of rotameter?

3. Attempt **any four** of the following. 12

1) What are the different characteristics of sound?

2) Write a note on Hall gauge meter.

3) Explain thermistors.

4) Explain the law of intermediate temperature of thermo-electricity.

5) Explain with neat diagram carbon microphone.

6) Write a note on high pressure measurement.

4. Attempt **any three** of the following. 12

1) Draw the block diagram of functional elements of measurement system.

2) Explain with neat diagram total radiation pyrometer.

3) Obtain an expression for rate of flow using Bernoulli's theorem.

4) Explain with neat diagram sound level meter.

5) Explain the principle, construction and working of Mcleod gauge with diagram.

5. Attempt **any two** of the following. **12**

1) Explain construction and working of search coil method for the measurement of magnetic field.

2) Explain the construction and working of platinum resistance thermometer.

3) Write a note on Venturi tube.

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