**Fill in the blanks**

1. Can an instrument suffer both zero drift and sensitivity drift at the same time?  
   A. Yes B. No C. It depends on the supply voltage D. None of these
2. The non coincidence between loading and unloading curves is known as  
   A. Zero drift characteristics B. Sensitivity drift characteristics  
   C. Hysteresis D. Zero drift plus sensitivity drift characteristics
3. A zero order system is the one in which output changes instantaneously as the input changes. The example of zero order system is  
   A. Potentiometer B. Liquid-in-glass thermometer  
   C. Accelerometer D. Transducer
4. The process of measurement  
   A. Always disturbs the system being measured  
   B. It may or may not disturb the system being measured  
   C. Never disturbs the system being measured  
   D. None of these
5. The difference between the measured value and the true value is known as  
   A. Relative error B. Random error  
   C. Absolute error D. Systematic error
6. The magnitude of environment-induced variation from the specified calibration condition is quantified by  
   A. Sensitivity drift B. Zero drift  
   C. Backlash D. Both (a) & (b)
7. The undesirable characteristics of an measuring system is/are  
   A. Drift B. Dead zone C. Non linearity D. All of these
8. Resistances can be measured with the help of a  …………

A. Wattmeter B. voltmeter

C. ammeter D. all of the above

1. An ammeter is a …………….. instrument.

A. secondary instrument B. absolute instrument

C. recording instrument D. integrating instrument

1. The instruments used for the measurement of pressure is/are  
   A. Bellows B. Diaphragms  
   C. Fiber optic pressure sensors D. All of these
2. Bourdon tube is used for the measurement of gauge pressure of  
   A. Gas B. Liquid fluid  
   C. Solid D. Both (a) and (b)
3. When visual indication of pressure level is required then the instrument generally used is  
   A. Monometers B. Diaphragm sensors  
   C. Bourdon tube D. Resonant wire device
4. The device which is used for making temporary measurements of flow is  
   A. Venturi B. Dull flow tube  
   C. Orifice plate D. Pitot static tube
5. In which of the following categories be thin plate diaphragm included?  
   a) Primary transducer b) Secondary transducer  
   c) Voltage measuring devices d) Spring balance systems
6. Which of the following quantities can be measured using bellows?  
   a) Absolute pressure b) Gauge pressure  
   c) Differential pressure d) All of the mentioned
7. Which of the following devices convert pressure to displacement?  
   a) Diaphragm b) Bellow  
   c) Capsule d) Both diaphragm and capsule
8. Which of the following is not a type of pressure sensing element?

A. Bellows B. Bourdon tube

C. Manometer D. Orifice plate

1. In SI system unit for speed is written as

A. meter B. meter/sec

C. meter/hour D. km/sec

1. Error of measurement =

A. True value – Measured value B Precision – True value

C. Measured value – Precision D. None of the above

1. Which of the following is used as indication instrument in a liquid expansion system?  
   a) Bellows b) Bourdon tube  
   c) Ammeter d) Thermometer
2. Which of the following is true for bimetallic type thermometer?  
   a) Two metals have same temperature coefficients  
   b) Two metals have different temperature coefficient  
   c) One metal is cooled always  
   d) None of the mentioned
3. Output of a bimetallic element will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
   a) Strain b) Pressure  
   c) Displacement d) Voltage
4. The thermocouple circuit which is used to measure temperature works on \_\_\_\_.  
   A. Seebeck effect B. Peltier effect  
   C. Thomson effect D. None of the above
5. Which of the following is chosen as a standard thermometric substance?  
   a. Gas b. Thermocouple  
   c. Electric resistance d. Mercury
6. The term which can differentiate thermodynamics from other sciences is \_\_\_\_.  
   a. Pressure b. Temperature  
   c. Mass d. none of the above

**10 Marks Questions**

1. Explain Static and dynamic characteristics of instrument
2. Explain any two types of pressure gauge with neat sketch
3. Define Strain and classify unbounded strain measurement device with sketch
4. Define force and classify different types of force measurement device
5. Define force and explain any liquid in glass thermometer with neat sketch
6. Define see back effect and explain any thermocouple with neat sketch
7. Explain mechanical tachometer with neat sketch
8. Explain Electrical or Digital tachometer with neat sketch
9. Explain photoelectric tachometer with neat sketch
10. Explain Stroboscope with neat sketch

**05 Marks Questions**

1. Explain Primary, Secondary & tertiary measurement system with proper example
2. Explain simple U-tube Manometer with neat sketch
3. Explain Bourden Tube Pressure Gauge with neat sketch
4. Explain Diaphragm Pressure Gauge with neat sketch
5. Explain bonded strain measurement system with neat sketch
6. Differentiate between bonded and unbounded strain gauge
7. Explain Hydraulic load cell with neat sketch
8. Explain Pneumatic load cell with neat sketch
9. Explain different types of Error
10. Differentiate between Contact & Non-Contact type Tachometer
11. Explain Liquid in glass Thermometer

**05 Marks Questions (Short Notes )**

1. Pressure Transducer
2. Piezoelectric Load Cell
3. Bimetallic Thermometer
4. Thermocouple
5. A.C. Tachogenereor
6. Bellows
7. Dead weight pressure gauge
8. Electrical tachometer
9. Resistance Thermometer
10. Static characteristics
11. Dynamic characteristics