

# UNIT-5 MCQ's

## Sensors

### MCQs on Basic Instrumentation Systems:

1. Instrumentation has become the heart of the industrial applications because instrumentation facilitates.....

- A. Electrical signal into non electrical quantity
- B. Non electrical quantity into electrical signal
- C. Electrical signal into mechanical quantity
- D. System automation

ANSWER: D.

2. Block diagram of Instrumentation system consist of.....

- A. Sensors/transducers
- B. Signal conditioning circuit
- C. Data transmission and presentation element
- D. Display
- E. All above

ANSWER: E.

3. .... is a device that converts a physical quantity to be measured into equivalent electrical voltage/current.

- A. Sensors/transducers
- B. Signal conditioners
- C. ADC
- D. Amplifier
- E. All above

ANSWER: A.

4. Following is example of active sensor (self-generating devices).

- A. LVDT
- B. Strain Gauge
- C. RTD
- D. Thermocouple
- E. All above

ANSWER: D.

5. Following is example of passive sensor.

- A. LVDT
- B. Strain Gauge
- C. RTD & Thermistors
- D. LDR
- E. All above

ANSWER: E.

6. Function of transducer is to convert

- A. Electrical signal into non electrical quantity
- B. Non electrical quantity into electrical signal
- C. Electrical signal into mechanical quantity
- D. All of these

ANSWER: B. Non electrical quantity into electrical signal

7. The transducer used for the measurements is/are

- A. Resistance temperature detectors
- B. Thermistors
- C. Ultrasonic
- D. All of these

ANSWER: D. All of these

Answer: b

Explanation: Analog transducers convert physical quantity to analog signals while digital transducers convert physical quantity to digital signals. Strain gauge is an example of an Analog transducer.

8. Self generating type transducers are \_\_\_\_\_ transducers.

- a) Active
- b) Passive
- c) Secondary
- d) Inverse

Ans : (a)

9. Which of the following is a digital transducer?

- a) Strain gauge
- b) Encoder
- c) Thermistor
- d) LVDT

Ans : (b)

10. S1: Transducer is a device which converts physical into electrical quantity

S2: Transducer is also called as sensor.

- a) S1 is true & S2 is false
- b) S2 is true & S1 is false
- c) Both S1 & S2 are true
- d) Both S1 & S2 are false

Ans (b)

11. Pick the correct statement regarding functions of a transducer

S1: Sense the magnitude, change in & / or frequency of same measurand

S2: To provide electrical output that furnishes accurate, quantitative data about the measurand

- a) S1 is true & S2 is false
- b) S2 is true & S1 is false
- c) Both S1 & S2 are true
- d) Both S1 & S2 are false

Ans : (c)

12. The transducers which requires an external power and their output is a measure of some variation such as resistance, inductance, capacitance etc., are called as

- a) Active transducer
- b) Primary sensor
- c) Passive transducer
- d) Self generating transducer

Ans : (c)

13. Which of the following is not a characteristic of an ideal transducer?

- a) High dynamic range
- b) Low linearity

- c) High repeatability
  - d) Low noise
- View Answer

Answer: b

Explanation: An ideal transducer should show high linearity. A linear system should produce exact output according to input.

14. Which transducer is known as ‘self-generating transducer’?

- a) Active transducer
- b) Passive transducer
- c) Secondary transducer
- d) Analog transducer

View Answer

Answer: a

Explanation: The name self-generating transducer is due to its property of working without the use of external power.

15. Which of the following represent active transducer?

- a) Strain gauge
- b) Thermistor
- c) LVDT
- d) Thermocouple

View Answer

Answer: d

Explanation: Active transducers are self-generating type, they don't require external power to work while passive transducers require external power to work.

16. Which of the following is an analog transducer?

- a) Encoders
- b) Strain gauge
- c) Digital tachometers
- d) Limit switches

View Answer

Answer: b

17. Signal conditioning is carried out in \_\_\_\_\_

- a) Transducer housing
- b) Processor
- c) Network interface
- d) None of the mentioned

View Answer

Answer: a

Explanation: Signal conditioning of smart sensors is carried out inside of transducer housing.

## MCQs on LVDT:

1. .... is a variable inductance displacement transformer.

- A. RVDT
- B. Piezoelectric accelerometer
- C. Bellows
- D. LVDT
- E. All above

ANSWER: D.

2. The core of LVDT is made up of....

- A. magnetic material
- B. ferromagnetic metal
- C. ferrites
- D. iron
- E. All above

ANSWER: E.

3. In LVDT two secondary windings are connected in....

- A. series
- B. parallel
- C. series proportion
- D. series opposition

ANSWER: D.

4. The application of LVDT is to measure.....

- A. pressure
- B. load/weight
- C. force/acceleration
- D. linear displacement
- E. All above

ANSWER: E.

5. The output voltage of LVDT is given by.....

- A.  $V_o = V_{s1} - V_{s2}$
- B.  $V_o = V_{s1} + V_{s2}$
- C.  $V_o = V_{s2} - V_{s1}$
- D.  $V_o = V_{s2} + V_{s1}$

ANSWER: A.

6. The linear variable differential transformer transducer is

- A. Inductive transducer
- B. Non-inductive transducer
- C. Capacitive transducer
- D. Resistive transducer

ANSWER: A. Inductive transducer

7. Which of the following represents drawback of the inductive transducer for displacement measurement?

- a) Act of electromagnetic force of attraction
- b) Lower sensitivity
- c) Requirement of large displacement
- d) None of the mentioned

View Answer

Answer: a

Explanation: Electromagnetic force of attraction is acted on moving core, and hence displacement source has to overcome this force.

8. Which of the following represents the application of inductive transducers?

- a) Displacement measurement
- b) Thickness measurement
- c) Both displacement and thickness measurement
- d) None of the mentioned

View Answer

Answer: c

Explanation: Inductive transducers can be used for measuring displacement and thickness of thin plate etc.

9. The application of LVDT is

- a) Joint motion
- b) Finger movement
- c) Limb movement
- d) Heart wall motion

Ans : (c)

10. In a LVDT, the two secondary voltages

- a) Are independent of the core position
- b) Vary unequally depending on the core position
- c) Vary equally depending on the core position
- d) Are always in phase quadrature

Ans : (b)

11. LVDT windings are wound on

- a) Steel sheets
- b) Aluminium
- c) Ferrite
- d) Copper

Ans : (c)

12. The principle of operation of LVDT is based on the variation of

- a) Self inductance
- b) Mutual inductance
- c) Reluctance
- d) Permanence

Ans : (b)

13. LVDT is an/a \_\_\_\_\_ transducer

- a) Magneto-strict ion
- b) Inductive
- c) Resistive
- d) Eddy current

Ans : (d)

14. Strain gauge, LVDT and thermocouple are examples of

- a) Active transducers
- b) Passive transducers
- c) Analog transducers
- d) Primary transducers

Ans : (c)

15. What is the principle of operation of LVDT?

- a) Mutual inductance
- b) Self-inductance
- c) Permanence
- d) Reluctance

View Answer

Answer: a

Explanation: Linear variable differential transformer (LVDT) is a type of transformer used for measuring displacement, and it has the same principle of operation of transformer.

## MCQs on Piezoelectric Accelerometer:

1. The main sensor of acceleration measurement is...

- A. platinum
- B. copper
- C. mixtures of sulphides
- D. quartz
- E. All above

ANSWER: D.

2. The piezoelectric accelerometer is...

- A. semiconductor sensor
- B. level sensor
- C. flow sensor
- D. self-generating sensor

ANSWER: D.

3. The piezoelectric accelerometer application is...

- A. machine monitoring
- B. monitor earthquake activity
- C. internal navigational system (INS)
- D. video games/camcorders
- E. All above

ANSWER: E.

4. Who invented the piezoelectric effect?

- a) Mary Elizabeth Barber
- b) Christian Doppler
- c) Marie curie and Pierre curie
- d) Pierre curie and Jacques curie

View Answer

Answer: d

Explanation: Piezoelectric effect was first invented and explained by curie brothers, Pierre curie and Jacques curie in 1980.

5. Which of the following represents piezoelectric materials?

- a) ADP
- b) Quartz
- c) Bernilite
- d) All of the mentioned

View Answer

Answer: d

Explanation: Quartz, ADP (Ammonium dihydrogen Phosphate), and bernilite are examples of piezoelectric materials.

6. Which of the following quantities cannot be measured using piezoelectric transducers?

- a) Pressure
- b) Strain
- c) Acceleration
- d) None of the mentioned

View Answer

Answer: d

Explanation: Piezoelectric transducers can be used to measure a wide range of quantities like pressure, acceleration, strain displacement etc.

7. Piezoelectric accelerometer requires damping system.

- a) True
- b) False

View Answer

Answer: b

Explanation: Since natural frequency of piezoelements are so high and far removed from range of frequencies normally required of accelerometers they don't need damping systems.

8. In piezoelectric strain transducer voltage developed is \_\_\_\_\_ to strain applied.

- a) Directly proportional
- b) Inversely proportional
- c) Equal
- d) Independent

View Answer

Answer: a

Explanation: For a piezoelectric strain transducer, as the strain applied increases output voltage also increases.

9. Certain type of materials generates an electrostatic charge or voltage when mechanical force is applied across them. Such materials are called

- a) Piezo-electric
- b) Photo-electric
- c) Thermo-electric
- d) Photo-resistive

Ans : (a)

10. Quartz and Rochelle salt belongs to \_\_\_\_\_ of piezo-electric materials

- a) Natural group
- b) Synthetic group
- c) Natural or Synthetic group
- d) Fiber group

Ans : (a)

11. Which of the following are piezo electric substances?

- 1. Barium titanate
- 2. Lead titanate
- 3. Lead Zirconate
- 4. Cadmium and sulphate

Choose correct one

- a) 1,2 and 4
- b) 1,3and4
- c) 1,2and 3
- d) 2,3and 4

Ans : (c)

12. Piezo-electric transducers are

- a) Passive transducers
- b) Inverse transducers
- c) Digital transducers
- d) Pulse transducers

Ans : (b)

13. Piezo electric crystal can produce an emf

- a) When external mechanical force is applied to it
- b) When radiant energy stimulates the crystal
- c) When external magnetic field is applied
- d) When the junction of two such crystals are heated

Ans : (a)

14. Which of the following can be measured using Piezo-electric transducer?

- a) Velocity
- b) Displacement
- c) Force
- d) Sound

View Answer

Answer: c

Explanation: Piezo-electric crystals produces an electric signal when pressure applied. Examples are quartz, Rochelle salt. That is, it converts force into electric signals.

15. Which of the following can be measured with the help of piezo electric crystal?

- a) Force
- b) Velocity
- c) Sound
- d) Pressure

Ans : (a)

## MCQs on RTD, Thermistor and Thermocouple:

1. ....is defined as the temperature sensor whose resistance changes in proportion with its temperature.

- a) strain guage
- b) piezoelectric
- c) resistance temperature detector
- d) thermocouple

Ans : c

2. In RTD following material is used..

- a) platinum
- b) copper
- c) nickel
- d) all above

Ans : d

3. In RTD following circuit is used to convert change in resistance into voltage

- a) Bridge type rectifier
- b) Wein- bridge
- c) Wheatstone bridge
- d) Differential amplifier



Ans : c

4. Which temperature transducer has positive and negative temperature coefficients?

- a) Thermocouple
- b) RTD
- c) Thermistor
- d) All above

Ans : c

5. During thermistor fabrication following material is used...

- a) sulphides
- b) maganese
- c) nickel
- d) cobalt
- e) all above

Ans : c

6. Which temperature transducer is used for highest temperature measurement?

- a) Thermocouple
- b) RTD
- c) Thermistor
- e) None of the above

Ans : a

7. ....is an active temperature sensor which produces an EMF proportional to the temperature difference between two junctions.

- a) Thermocouple
- b) RTD
- c) Thermistor
- e) LVDT

Ans : a

8. Thermistor is a transducer. Its temperature coefficient is

- A. Negative
- B. Positive
- C. Zero
- D. None of these

ANSWER: A. Negative

9. A thermistor has a material constant  $\beta$  of 2000 kelvin. If its resistance is 105 kilo ohm at 300 kelvin temp, what will be its resistance at 600 kelvin?

- a) 700.1 ohm
- b) 707.49 ohm
- c) 705.50 ohm
- e) 706.35 ohm

Ans : b

10. If at one end, the two wires made of different metals are joined together then a voltage will get produced between the two wires due to difference of temp. between the two ends of wires. This effect is observed in..

- A. Thermocouples
- B. Thermistors
- C. RTD
- D. Ultrasonics

ANSWER: A. Thermocouples

11. What is the relation of temperature coefficient of resistivity on the coefficient of thermal expansion in RTD?

- a) Higher
- b) Lower
- c) Equal
- d) None of the mentioned

[View Answer](#)

Answer: a

Explanation: It is used to provide a considerable change in resistance when exposed to temperature.

12. A metal with temperature coefficient of resistance has a value 200, its initial resistance is given by  $40\Omega$ . For an increase in  $30^{\circ}\text{C}$  to  $35^{\circ}\text{C}$  what will be the final resistance value?

- a)  $40\text{ K}\Omega$
- b)  $4\text{ K}\Omega$
- c)  $40\ \Omega$
- d)  $400\ \Omega$

[View Answer](#)

Answer: a

Explanation: Answer obtained using expression  $R_T = R_0(1 + \alpha\Delta T)$ , where  $\alpha$  represents temperature coefficient of resistance,  $R_0$  and  $R_T$  represents initial and final resistance values.

13. Which of the following can be used to measure using thermistors?

- a) Very low
- b) In-between  $100\Omega$  and  $1\text{M}\Omega$
- c) Greater than  $1\text{M}\Omega$
- d) None of the mentioned

[View Answer](#)

Answer: b

Explanation: Thermistor at  $20^{\circ}\text{C}$  can be used to measure resistance values between  $100\Omega$  and  $1\text{M}\Omega$ .

14. Thermistors may be in wire form.

- a) True
- b) False

[View Answer](#)

Answer: b

Explanation: Due to high brittleness thermistors cannot be formed into wire type. Hence they are shaped into bead form.

15. Which of the following is correct for thermistors?

- a) Positive temperature coefficient of resistance
- b) Negative temperature coefficient of resistance
- c) Unpredictable temperature coefficient
- d) None of the mentioned

[View Answer](#)

Answer: b

Explanation: For thermistors as temperature increase, resistance decreases.

16. Thermistors have high stability.

- a) True
- b) False

[View Answer](#)

Answer: b

Explanation: Stability of thermistors are not satisfactory. They can be improved by using high temperature.

17. Thermocouple is a \_\_\_\_\_

- a) Primary device
- b) Secondary transducer
- c) Tertiary transducer
- d) None of the mentioned

[View Answer](#)

Answer: a

Explanation: Thermocouple is a device which converts thermal energy to electrical energy and it can be treated as a primary device.

18. Operation of thermocouple is governed by \_\_\_\_\_

- a) Peltier effect
- b) Seebeck effect
- c) Thomson effect
- d) All of the mentioned

[View Answer](#)

Answer: d

Explanation: Operation of thermocouple is based on three major effects- Peltier, Thomson and seebeck, all describe the relation between current flow and temperature between two different metal.

19. \_\_\_\_\_ describes current flow between two junctions formed by two different metals.

- a) Peltier effect
- b) Thomson effect
- c) Seebeck effect
- d) None of the mentioned

[View Answer](#)

Answer: a

Explanation: When two different metals are connected to form two junctions, current flow will occur from one junction to other. This is described by peltier effect.

20. Amount of heat liberated or absorbed when 1A current passes is called \_\_\_\_\_

- a) Thomson coefficient
- b) Peltier coefficient
- c) Seebeck coefficient
- d) None of the mentioned

[View Answer](#)

Answer: b

Explanation: Peltier coefficient relates heat liberated or absorbed and current flow.

21. Total seebeck effect can be found as \_\_\_\_\_

- a) Total peltier effect
- b) Total Thomson effect
- c) Partly peltier and partly Thomson effect
- d) None of the mentioned

[View Answer](#)

Answer: c

Explanation: All three effects, peltier, seebeck and Thomson effects are connected to each other, and total seebeck effect can be found as partly peltier and partly Thomson effect.

22. Thermocouple cannot used for measurement of temperature of liquid.

- a) True
- b) False

[View Answer](#)

Answer: b

Explanation: Immersion type thermocouple can be used to measure temperature of liquid, in which thermocouple is immersed in liquid.

23. Thermocouple cannot be used to measure \_\_\_\_\_

- a) Temperature of gas
- b) Temperature of liquid
- c) IR radiation
- d) None of the mentioned

View Answer

Answer: d

Explanation: Infra-Red radiation is characterized by temperature and thermocouple can be used to measure temperature.

24. Peltier effect is reverse of seebeck effect.

- a) True
- b) False

View Answer

Answer: a

Explanation: Peltier effect and seebeck effect operations are reverse to each other.

## MCQs on Stain-Gauge/Load cell:

1. .... is a passive resistive transducer which converts the mechanical elongation and compression into a proportional resistance change.

- a) RTD
- b) Strain guage
- c) Diaphragm
- e) Bellows

Ans : b

2. .... is defined as the unit change in resistance per unit change in length of the strain guage wire.

- a) form factor
- b) gain factor
- c) gauge factor
- e) load factor

Ans : c

3. Types of strain gauges are....

- a) unbonded
- b) bonded
- c) foil type
- d) semiconductor
- e) all above

Ans : e

4. Application of strain gauges .....

- a) Pressure measurement
- b) electronic weighing system
- c) force measurement
- d) all above

Ans : d

5. Strain gauge is a....

A. Active device and converts mechanical displacement into a change of resistance

- B. Passive device and converts electrical displacement into a change of resistance
- C. Passive device and converts mechanical displacement into a change of resistance
- D. Active device and converts electrical displacement into a change of resistance

ANSWER: C. Passive device and converts mechanical displacement into a change of resistance

6. For the measurement of pressure the instruments used can be

- A. Mechanical
- B. Electro-mechanical
- C. Electronic
- D. All of these

ANSWER: D. All of these

7. If the load/pressure is measured with strain gauge then the number of strain gauge normally required are

- A. One
- B. Two
- C. Three
- D. Four

ANSWER: D. Four

8. Load cells are used for measuring \_\_\_\_\_

- a) Large weights only
- b) Small weights only
- c) Weights moving in high speed
- d) Slowly moving weights

View Answer

Answer: d

Explanation: Load cells are used for measuring weights of slowly moving bodies so that their weight will be uniformly distributed over load cell surface.

9. Which of the following arrangements are used in load cells?

- a) Tensile strain gauges
- b) Compressive strain gauges
- c) Both tensile and compressive strain gauges
- d) None of the mentioned

View Answer

Answer: c

Explanation: Force applied to a load cell is measured using determining tensile and compressive components of strain. Strain gauges are attached to the surface of the load cell.

10. Which of the following conversion is correct for load cell?

- a) Force to strain
- b) Force to displacement
- c) Force to voltage
- d) Both force to strain and force to displacement

View Answer

Answer: d

Explanation: Commonly load cell measure applied force using strain gauges, but in some cases, force is measured by detecting displacement, that is a force to displacement conversion.

11. The change in resistance of a metal wire owing to strain is due to

S1: Change in dimension of wire expressed by factor  $(1-2\mu)$

S2: Change in resistance ?

- a) S1 is true & S2 is false
- b) S2 is true & S1 is false
- c) Both S1 & S2 are true
- d) Both S1 & S2 are false

Ans : (b)

12. A strain gauge is a passive transducer and is employed for converting

- a) Mechanical displacement into a change of resistance
- b) Pressure into a change of resistance
- c) Force into a displacement
- d) Pressure into displacement

Ans : (a)

13. Resolution of a SG transducer depends on

- a) Material of wire
- b) Length of wire
- c) Diameter of wire
- d) Excitation voltage

Ans : (c)

14. The sensitivity factor of strain gauge is normally of the order of

- a) 1 to 1.5
- b) 1.5 to 2.0
- c) 0.5 to 1.0
- d) 5 to 10

Ans : (b)

15. In wire wound strain gauges, the change in resistance is due to

- a) Change in diameter of the wire
- b) Change in length of the wire
- c) Change in both length and diameter
- d) Change in resistivity

Ans : (c)

16. Bonded wire strain gauges are

- a) Exclusively used for construction of transducers
- b) Exclusively used for stress analysis
- c) Used for both stress analysis and construction of transducer
- d) Pressure measurement

Ans : (c)

17. The draw backs of strain gauges are

S1: Low fatigue life

S2: They are expensive, brittle and sensitive to temperature

S3: Poor linearity

Choose the correct one

- a) S1 and S2
- b) S2 and S3
- c) S1 and S3
- d) S1 only

Ans : (b)

18. Load cells are primary transducers.

- a) True
- b) False

[View Answer](#)

Answer: a

Explanation: Primary transducers are which converts measurand into mechanical quantities. Load cell converts measurand into strain or displacement which are mechanical quantities and hence load cells are primary transducers.

19. What will happen for resistivity metal and semiconductor if the temperature is increased?

- a) Increases
- b) Decreases
- c) For metal increases and for semiconductor decreases
- d) For metal decreases and for semiconductor increases

[View Answer](#)

Answer: c

Explanation: Metal has a positive temperature coefficient of resistance and semiconductor has a negative temperature coefficient of resistance.

## MCQs on Pressure Transducers (Bellows/Diaphragm/Bourdon Tube):

1. The elastic type instruments used for the measurement of pressure is/are

- A. Bellows
- B. Diaphragms
- C. Bourdon tube
- D. All of these

ANSWER: 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)

ANSWER: D. Both (a) and (b)

3. Which of the following device can be used for force measurement?

- a) Beams
- b) Bellows
- c) Capsule
- d) Bourdon tube

Answer: a

Explanation: Beams are used for force measuring applications, all other devices listed are used for measuring pressure.

4. Diaphragm element can also be used for force measurement.

- a) True

b) False

Answer: a

Explanation: Diaphragm elements act like flat springs in case of force measurement and can be used for measuring both force and pressure.

5. Which of the following statement is true for force?

a) Force is a scalar quantity

b) Force is a vector quantity

c) Force is a dimensionless quantity

d) None of the mentioned

View Answer

Answer: b

Explanation: Force can be described as a vector quantity, in which measurement of magnitude and direction of application is important.

6. Which of the following statement is true for diaphragms?

a) Used for measuring small forces

b) Used for measuring large forces

c) Used for measuring dynamic forces

d) None of the mentioned

View Answer

Answer: a

Explanation: Diaphragm elements, being a small force capacity is used for measuring small forces only.

7. Which of the following quantities can be measured using bellows?

a) Absolute pressure

b) Gauge pressure

c) Differential pressure

d) All of the mentioned

View Answer

Answer: d

Explanation: Bellows can be used for measuring Absolute pressure, Gauge pressure and Differential pressure of measuring medium. This is accomplished using two bellow chambers provided.

8. Which of the following conversion take place in bourdon tubes?

a) Pressure to displacement

b) Pressure to voltage

c) Pressure to strain

d) Pressure to force

View Answer

Answer: a

Explanation: In bourdon tubes converts input pressure into displacement and displacement of the needle will be directly proportional to input pressure.

9. Capsules are made from diaphragms.

a) True

b) False

View Answer

Answer: a

Explanation: Capsules are made by enclosing two identical corrugated diaphragms forming a closed chamber.

10. In bellows pressure to displacement conversion takes place.

a) True

b) False

View Answer



Answer: b

Explanation: In bellows pressure to force conversion takes place, which is acted on bellows and can be measured for calculating applied pressure.

11. Which of the following devices convert pressure to displacement?

- a) Diaphragm
- b) Bellow
- c) Capsule
- d) Both diaphragm and capsule

View Answer

Answer: d

Explanation: Both diaphragm and capsule convert pressure into displacement which can be measured using indicating instruments. Displacement will be proportional to applied pressure.

## MCQs on LDR:

1. With the increase in the intensity of light, the resistance of a photoconductive cell

- A. Increases
- B. Decreases
- C. Remains same
- D. None of these

ANSWER: B. Decreases

2. .... resistance offered by LDR in the absence of light.

- A. low
- B. high
- C. constant
- D. dark

ANSWER: D.

3. Photoelectric devices are sensitive to all wavelength.

- a) True
- b) False

View Answer

Answer: b

Explanation: Photoelectric devices are sensitive to certain wavelength only hence they should be calibrated before every use.

4. In photo emissive transducers, electrons are attracted by \_\_\_\_\_

- a) Cathode
- b) Anode
- c) Grid
- d) Body

View Answer

Answer: b

Explanation: In photo emissive transducers, electrons emitted by the cathode are attracted by anode plates.

5. Why inert gas is used in photo electric transducers?

- a) To increase efficiency
- b) To increase sensitivity
- c) To increase robustness
- d) None of the mentioned

View Answer

Answer: b

Explanation: Inert gas of pressure 1mm Hg is filled in a tube of photoelectric transducer to increase sensitivity.

6. LDR's are also called \_\_\_\_\_

- a) Photo voltaic cell
- b) Photo resistive cell
- c) Photo emissive cell
- d) All of the mentioned

View Answer

Answer: b

Explanation: Photo resistive cells and LDR works on the interaction of light and its effect on resistance change.

7. Photo resistive cells are \_\_\_\_\_

- a) Active device
- b) Passive device
- c) Insulating device
- d) None of the mentioned

View Answer

Answer: b

Explanation: Passive devices are those doesn't require an external power source. Resistors and LDR's are passive devices.

8. Which of the following materials can be used as photoconductive transducer?

- a) Cadmium Sulphide
- b) Silicon
- c) Germanium
- d) All of the mentioned

View Answer

Answer: d

Explanation: Photoconductive cells are materials which changes conductivity on the application of light.

9. \_\_\_\_\_ is the example of photo emissive cell.

- a) LDR
- b) Photo diode
- c) Photo transistor
- d) Photo multiplier

Ans : (a)

10. The resistance of LDR \_\_\_\_\_ when exposed to radiant energy.

- a) Remains unaltered
- b) Increases
- c) Reaches maximum
- d) Decreases

Ans : (d)

## MCQs on semiconductor/biosensors:

1. Gas sensor can detect the presence of ....

- A. oxygen
- B. hydrogen
- C. carbon monoxide
- D. alcohol vapour
- E. All above

ANSWER: E.

2. .... Can be defined as analytical device which include a combination of biological detecting elements.

- A. oxygen sensor
- B. gas sensor
- C. bio sensor
- D. alcohol sensor
- E. all above

ANSWER: C.

3. Which of the following is the main disadvantage of solid state semiconductor detector?

- a) Low accuracy
- b) Low sensitivity
- c) It should be maintained at low temperature
- d) High pressure has to be produced

View Answer

Answer: c

Explanation: The main disadvantage of solid state semiconductor detector is that it must be maintained at low temperature. This is necessary to reduce noise and to prevent deterioration of detector characteristics.

4. Quartz can be used as bio sensors.

- a) True
- b) False

View Answer

Answer: a

Explanation: In QCM, piezoelectric nature of quartz is utilized.

5. Magnetic bio sensor is wide used for \_\_\_\_\_

- a) Blood detection
- b) DNA detection
- c) ECG detection
- d) EMG detection

View Answer

Answer: b

Explanation: Magnetic bio sensors are used for DNA detection.

6. Non contacting type bio sensors are \_\_\_\_\_

- a) Radiation type
- b) Electromagnetic type
- c) Radiation or electromagnetic type
- d) None of the mentioned

View Answer

Answer: c

Explanation: Bio sensors may be contacting or non-contacting type. Non contacting type sensors may be electromagnetic or radiation type.

END OF MCQ BANK