UNIT IV

1. In a longitudinal field,changes in magnetization due to torsion given in a ferromagnetic rod is called
2. Hall effect
3. **Matteucci effect**
4. Villari effect
5. Thomson effect
6. The change of the magnetization of a material when subjected to a mechanical stress is called
7. Hall effect
8. Matteucci effect
9. **Villari effect**
10. Wiedemann effect
11. The twisting of a ferromagnetic rod through which an electric current is flowing when the rod is placed in a longitudinal magnetic field
12. Hall effect
13. Matteucci effect
14. Villari effect
15. **Wiedemann effect**
16. A \_\_\_\_\_\_\_\_\_\_\_\_\_sensor uses the fact that the electrical resistance in a ferromagnetic thin film alloy is changed through an external magnetic field
17. Thermoemf sensor
18. Inductive sensor
19. **Magnetoresistive sensor**
20. Magnetostriction sensor
21. The ‘eddy current’ forces the current flowing through the interior of a material to move to its surface level is referred to as
22. **Skin effect**
23. Matteucci effect
24. Villari effect
25. Wiedemann effect
26. SQUID refers to
27. **sensitive magnetometer used to measure extremely subtle magnetic fields**
28. sensitive magnetometer used to measure extremely crude magnetic fields
29. sensitive magnetometer used to measure crude magnetic fields
30. sensitive magnetometer used to measure subtle magnetic fields
31. \_\_\_\_\_\_\_\_\_\_\_\_\_\_is a property of ferromagnetic materials that causes them to change their shape when subjected to a magnetic field.
32. Magnetoresistive sensor
33. Magnetization
34. **Magnetostriction**
35. Pyroelectric
36. \_\_\_\_\_\_\_\_\_\_\_\_\_\_is a mechanical property that denotes the elasticity in tension or compression.
37. Magnetization
38. **Δy effect**
39. Villari effect
40. Wiedemann effect
41. \_\_\_\_\_\_\_\_\_ which is basically a change in resistance of specified materials with magnetic field impressed.
42. **Thomson effect**
43. Matteucci effect
44. Villari effect
45. Wiedemann effect
46. The output voltage of a Hall sensor is directly proportional to the
47. Electric field
48. **Magnetic field**
49. Total moment
50. Total Flux
51. Tiny devices that use variations in an external magnetic field to generate electrical signals and energy
52. **Wiegand and pulse wire sensors**
53. Thermal sensor
54. Magnetic sensor
55. Inductive sensor
56. SQUID means
57. Superior Quantum Interference Devices
58. Super Quantum Interference Devices
59. Superconducting Quantum Indicating Devices
60. **Superconducting Quantum Interference Devices**
61. The ability of two weakly coupled superconductors to sustain at zero voltage, a super current is associated whose magnitude depends on the phase difference between the two superconductors is called
62. Hall effect
63. **Josephson effect**
64. Villari effect
65. Wiedemann effect
66. The maximum current which Josephson weak link can support without developing any voltage across it is known as \_\_\_\_\_\_\_\_
67. Josephson effect
68. Villari effect
69. Wiedemann effect
70. **Critical current**
71. \_\_\_\_\_\_\_\_\_ arise because of Lorentz force on the charge carrier transport phenomena in condensed medium.
72. **Galvanomagnetic effects**
73. Josephson effect
74. Villari effect
75. Wiedemann effect
76. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is a mechanical property that measures the tensile or compressive stiffness of a solid material when the force is applied lengthwise.
77. Elasticity
78. **Young’s modulus**
79. Solidity
80. Tensile modulus
81. Villari effect is also called as
82. Mateucci effect
83. Josephson effect
84. **inverse magnetostrictive effect**
85. Wiedemann effect
86. If External magnetic field is applied to ferromagnetic material in vertical direction, the dipoles gets arranged in \_\_\_\_\_\_\_\_\_
87. **same direction**
88. in different direction
89. horizontal direction
90. transverse direction
91. A \_\_\_\_\_\_\_\_\_sensor is an electronic device that is designed to monitor, detect, record and regulate linear and rotational forces exerted upon it.
92. Radiation
93. Magnetic
94. **force torque**
95. Inductive
96. Packed in a small package with low power consumption, this \_\_\_\_\_\_\_\_\_\_\_ sensor allows for continuous distance reading.
97. Thermal sensor
98. Magnetic sensor
99. Inductive sensor
100. IR proximity sensor
101. Proximity sensor operate over a range of
102. **10cm to 80cm**
103. **20cm to 90cm**
104. **30cm to 60cm**
105. **1m-2m**
106. A specific type of material when subjected to pulse voltages under stress shows switching effect is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_
107. **Sixtus-Tonks effect**
108. Magnetic sensor
109. Inductive sensor
110. IR proximity sensor
111. When exposed to an alternating external magnetic field, a Wiegand wire will initially retaining its magnetic polarity - when the external field reaches a certain threshold, the polarity of the wire segment will \_\_\_\_\_\_\_\_\_\_\_\_\_
112. Be same
113. Reverse
114. **abruptly Reverse**
115. adverse
116. Wiegand sensors
117. **Has self-powering capacity**
118. Does not have self powering capacity
119. Takes power from another source
120. None of the above
121. SQUIDs are sensitive enough to measure fields as low as \_\_\_\_\_\_\_\_\_
122. 6×10−14 T
123. **5×10−14 T**
124. 7×10−14 T
125. 4×10−14 T
126. When certain materials are cooled below a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ temperature remarkable interactions of electric currents and magnetic field occur.
127. Certain
128. **Superconducting transition**
129. Curie
130. Critical
131. In solid or hollow cylindrical shaft, stress develops in two principal orthogonal directions, one compressive and other tensile, each at angle \_\_\_\_\_\_\_\_\_
132. ±60°
133. **±45°**
134. ±120
135. ±65°
136. Lorentz force is
137. **F=eE+e[vxB]**
138. F=eE+v[exB]
139. F=ev+e[vxB]
140. F=vE+e[vxB]
141. Hall mobility is the product of
142. **drift mobility of the carrier and hall scattering factor**
143. drift mobility of the carrier and scintillation factor
144. Brownian movement and hall scattering effect
145. Scattering and drift mobility

**1). A Sensor is a \_\_\_\_\_\_\_.**

Subsystem

Machine

Module

**All the above**

**2). The function of a sensor is to \_\_\_\_\_\_\_\_.**

Detect events within specified environment

Separate physical parameters

Track and transfer data to computer processor

**Both a and c**

**3). Which of the following are examples of sensors?**

Tactile sensor

MARG sensor

Biosensor

**All the above**

**4). Sensor provides output signal depending on \_\_\_\_\_\_\_\_.**

**Input**

Physical quantity

Both a and b

None of the above

**5). Sensors convert signals from analog to \_\_\_\_\_\_\_ domain.**

Digital

Electrical

Mechanical

**Both a and b**

**6). LDR sensor is abbreviated as \_\_\_\_\_\_\_\_.**

**Light Dependent Resistor**

Light determinant Resistor

Luminous Duplicated Resistor

None of the above

**7). Which \_\_\_\_\_\_ sensors resistance value varies with respect to light intensity?**

**LDR**

Photosensitive

Bio

All the above

**8). LDR sensor is made up of \_\_\_\_\_\_\_ material.**

Conductors

Insulators

**Semiconductor**

None of the above

**9). What is the resistance value of the LDR sensor in absence of light \_\_\_\_\_\_\_.**

**Several mega ohms**

100’s of megaohms

10-100ohms

10,0000 ohms

**10). The ratio between the resultant output signal to a measured property of a sensor is called \_\_\_\_\_\_.**

**Sensitivity**

Resistivity

Conductivity

Both b and c

**11). \_\_\_\_\_\_\_ sensor provides data about the chemical composition of its environment in terms of gas, and liquid phase.**

**Chemical sensor**

Liquid sensor

Air sensor

All the above

**12). Analog sensors generate \_\_\_\_\_\_\_ analog kind of output signals.**

Discrete

**Continuous**

Both a and b

Does not generate

**13). Which of the following is the function of the accelerometer sensor?**

Detects changes in position, orientation

Detects variation in velocity, shock

Detects variation in tilt and vibration

**All the above**

**14). Analog accelerometers are classified based on \_\_\_\_\_\_\_\_.**

Sensitivity

Configuration

**Both a and b**

Power dissipation

**15). \_\_\_\_\_ sensors detect a quantity of light striking the sensor component.**

**Light sensor**

Beam sensor

Velocity sensor

Speed sensor

**16). \_\_\_\_\_\_\_ is used as a switch in Analog sensors.**

**LDR**

PN diode

Thyristor

All the above

**17). A dynamic microphone is based on \_\_\_\_\_\_\_ principle.**

**EM induction**

Electric induction

Magnetic induction

All the above

**18). Pressure sensor generates output in \_\_\_\_\_\_\_\_ form.**

Digital

**Analog**

Both a and b

Heat

**19). The output generated by the piezoelectric sensor is \_\_\_\_\_\_\_\_.**

Mechanical

**Electric charge**

Chemical

All the above

**20). Do digital sensors overcome the disadvantages of analog sensors?**

**Yes**

No

Maybe

**21). Which of the following are the components of a digital sensor?**

Cable

Transmitter

Sensor

**All the above**

22) Lithography process is used to pattern:

a.Metal and semiconductor layers

b.Metal and insulating layers

c. Metal, Semiconductor and insulation layers

**d. Semiconductor and insulation layers**

**23)** Why are commercially available silicon wafers circular in shape?

a.For fabricating maximum number of devices per unit area

b.For ease of handling during process flow execution

**c.Because the ingot from which it is derived is cylindrical owing to upstream processes**

d.Making flats to identify the silicon type is easier on circular wafer

24) Micromachining process is used to increase selectivity, accuracy,performance etc.,

**a.True**

b.False

25.Thermal deformation is the major problem in micromachining

**a.True**

b.False

***Note:Answers for the following questions are given at the end***

1. Interest of increasing wafer diameter from 200 mm to 300 mm
   1. The price of a 300 mm wafer is lower
   2. It is easier to fabricate
   3. To produce more silicon devices from a single wafer
   4. To increase the size of a die
2. What is a n type Si semiconductor (SC)
   1. A Si semiconductor without impurities
   2. A Si Semiconductor with impurities from column III and V of Mendeleev table
   3. A Si Semiconductor with impurities from column III of Mendeleev table
   4. A Si Semiconductor with impurities from column V of Mendeleev table
3. What is the thickness of the dielectric in a 28 nm MOS transistor
   1. Lower than 1 µm
   2. Lower than 10 nm
   3. Lower than 1 nm
   4. Lower than 0.1 nm
4. The graphene based sensors are normally highly sensitive for individual gas molecule detection, …
5. because of linear energy dispersion and low density of states near the Dirac point
6. because that the molecules are absorbed on a uniform single atomic sheet
7. because of interaction with π electrons
8. because of high conductance in grapheme
9. In a nanobiosensor based on a cantilever used in dynamic mode, the shift of the resonance frequency is due to:
   1. A variation of absorbed mass
   2. A variation of temperature
   3. A variation of stress
   4. A piezoelectric effect
10. What is a nanobiosensor made of?
11. A probe and a surface
12. A sensing layer and a transducer
13. A target and a probe molecule
14. A biomarker and a probe
15. Which of the following quantities cannot be measured by a load cell?
16. Pressure
17. Temperature
18. Level
19. All of the above
20. A load cell is a
21. Strain gauge
22. Photovoltaic cell
23. Thermistor
24. Pressure pick up
25. A cadmium sulfide cell is a
26. Solar cell
27. Dry cell
28. Photovoltaic cell
29. Photoconductive cell
30. What is a conveyor?
31. A conveyor is a static equipment that is used to store heavy and bulky materials
32. A conveyor is a moving equipment that is used to store heavy and bulky materials
33. A conveyor is a moving equipment that is used to carry heavy and bulky materials
34. A conveyor is a moving equipment that is used to carry light and compact materials only
35. Which of the following is true about the speed of the conveyor belt?
36. Fixed conveyors need not be shut down during any speed change
37. Adjustable speed belts can be changed only manually
38. Fixed speed drives can undergo minor speed changes
39. Variations of speed is not possible with conveyors
40. Which of the following is not of importance when a conveyor is designed?
41. Type of industry where the conveyor is being used
42. Type of material being carried by the conveyor
43. Cost
44. Length of travel of the conveyor
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51. Which of the following is true about frame configuration?
52. Frame configuration refers to the size of the conveyor
53. Frame configuration refers to the size and shape of the conveyor
54. Frame configuration refers to the capacity of the conveyor
55. Frame configuration refers to the shape of the conveyor
56. Which of the following is a correct description about the different types of conveyors?
57. Belt conveyor transports material in any direction
58. Slat conveyor requires high maintenance
59. Vibrating conveyor can convey materials of any friction factor
60. Screw conveyors usually handle lightweight materials
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64. Frame configuration refers to the capacity of the conveyor
65. Frame configuration refers to the shape of the conveyor
66. Choose the correct unit of throughput(Throughput is a measure of the capacity of the conveyor to handle bulky materials).
67. Cubic feet per minute
68. Meter cube
69. Square feet per second
70. Meter square
71. Which of the following is false about conveying systems?
72. An essential factor to consider before choosing the right conveyor system is the environment of operation
73. Conveyors cannot be used as feeders
74. The composition of the material being conveyed is very important
75. The surrounding temperature is one of the deciding factors
76. Which of the following is false about conveyors?
77. Cleats can be used to prevent slipping
78. Backstopping brakes are used for straight belts
79. Anti-static belts are used when electric components are conveyed
80. Soft starters avoid overloading the motor

**21.** Today, almost all electronic weighing scales use for the measurementof weight

1. Load cell
2. Strain gauge
3. Magentoresistance
4. Gyroscope

**22.** Sensors that use an additional energy source for their operation are called \_ \_ \_

a.modulating sensors

1. Interrogating sensors
2. Direct sensors
3. Both a) and b)

23 sensors are not affected by ambient conditions, such as dust, humidity, and vibrations

and are insensitive to some ambient conditions based on the principle that these sensors display a constant flow of electrical current, making their characteristics constant over time.

**A,** LVDT

1. LVDT
2. Hall effect
3. Load cell

**24.** Sensors that use an additional energy source for their operation are called \_ \_ \_

1. modulating sensors
2. Interrogating sensors
3. Direct sensors
4. Both a) and b)
5. The maximum amount a weight reading may deviate from a straight line between zero and the maximum capacity of the balance is:
   1. Repeatability
   2. Capacity
   3. Linearity
   4. Net weight

# The smallest increment of weight a balance will display:

* 1. Tare weight
  2. Readability
  3. Net weight
  4. Capacity

# A hook or connection point on the bottom of the balance that suspends items for weighing

* 1. Auto zero tracking
  2. Full-scale tare
  3. Calibration mass
  4. Below-balance weighing

# Capability that lets users tare via computer or manually

1. Checkweighing
2. Digital tare
3. Net weight
4. Digital filters

# Weighing application that uses a preset reference weight to equal 100%

* 1. Percent weighing
  2. Keypad calibration
  3. Net total formulation
  4. Checkweighing

1. Strain gage load cells provide accuracies from within
2. 0.03% to 0.25% full scale
3. 0.3% to 2.5% full scale
4. 3% to 5% full scale
5. 3% to 4% full scale
6. Gauge Factor is defined as the ratio between
7. the unit change in resistance to the per unit change in length.
8. the unit change in resistance to the per unit change in area.
9. the unit change in resistance to the per unit change in resistivity.
10. the unit change in resistance to the per unit change in temperature.
11. Hydraulic load cells are ------least accurate, lease sensitive and [capacitance load cells](https://instrumentationtools.com/load-cell-working-principle/) are ----
    1. least accurate, highly accurate
    2. most accurate, highly accurate c.moderately accurate, highly accurate

d. least accurate, less accurate

|  |  |
| --- | --- |
| 1 | C |
| 2 | d |

|  |  |
| --- | --- |
| 3 | C |
| 4 | A |
| 5 | A |
| 6 | B |
| 7 | b |
| 8 | A |
| 9 | D |
| 10 | C |
| 11 | C |
| 12 | A |
| 13 | C |
| 14 | C |
| 15 | B |
| 16 | A |
| 17 | D |
| 18 | A |
| 19 | B |
| 20 | B |
| 21 | A |
| 22 | D |
| 23 | A |
| 24 | A |
| 25 | C |
| 26 | B |
| 27 | D |
| 28 | B |
| 29 | A |
| 30 | A |
| 31 | A |
| 32 | A |