

1. Which among the following is not a type of Non-destructive testing?

- a) Compression test
- b) Visual testing
- c) Ultrasonic testing
- d) Eddy current testing

View Answer

Answer: a

Explanation: Compression test is a type of destructive testing. This test is used to determine behavior of metals under compressive load. Visual testing, ultrasonic testing, eddy current testing are types of non-destructive testing.

2. Identify the type of destructive testing \_\_\_\_\_

- a) Radiographic test
- b) Dye penetrant test
- c) Creep test
- d) Visual testing

View Answer

Answer: c

Explanation: Creep test is a type of destructive test. It is defined as slow plastic deformation at high temperatures for a longer time under constant stresses. Creep occurs at room temperature and at high temperatures.

3. Which among the following is the last step in magnetic particle test method?

- a) Observation and inspection
- b) Circular magnetization
- c) Demagnetization
- d) Magnetization

View Answer

Answer: c

Explanation: Different steps involved in magnetic particle test are cleaning the surface, magnetizing the metallic component, application of ferromagnetic powder, observation and inspection and demagnetization.

4. Which of the following statements is/are true for the ultrasonic test?

- a) Equipment used for ultrasonic testing is portable
- b) Complicated shapes can be easily scanned
- c) Waves generated are health hazardous
- d) Waves generated are health hazardous and complicated shapes can be easily scanned

View Answer

Answer: a

Explanation: Ultrasonic test uses sound waves of high frequency to detect discontinuities. This method is used to detect flaws on the surface and also deep inside the component. The waves travel in straight line and are reflected from metal gas interface or discontinuities in their path.

5. Which test can be performed without skilled labour?

- a) Probe test
- b) Bend liquid test
- c) Dye penetrant test

d) Torsion test

View Answer

Answer: c

Explanation: Dye penetrant test does not require any skilled labour. This method only detects surface discontinuities and this test needs to be observed with naked eyes or with a low magnifying glass.

6. What is nondestructive test?

a) Nondestructive tests are applications for detecting flaws in materials without impairing their usefulness

b) Nondestructive tests are applications for detecting flaws that impair the use of the materials such as pressure testing

c) Nondestructive tests are applications for detecting flaws in materials with impairing their usefulness

d) Nondestructive tests are applications for detecting flaws that do not impair the use of the materials such as pressure testing

View Answer

Answer: a

Explanation: Nondestructive tests are applications for detecting flaws in materials without impairing their usefulness.

7. What is a destructive test?

a) Destructive tests are applications for detecting flaws in materials without impairing their usefulness

b) Destructive tests are applications for detecting flaws that impair the use of the materials such as pressure testing

c) Destructive tests are applications for detecting flaws in materials with impairing their usefulness

d) Destructive tests are applications for detecting flaws that do not impair the use of the materials such as pressure testing

View Answer

Answer: b

Explanation: Destructive tests are applications for detecting flaws that impair the use of materials such as pressure testing.

**1) In which type of test the capillary action principle is used?**

**a.** Probe test

**b.** Bend liquid test

**c.** Dye penetrant test

**d.** None of the above

Answer Explanation

**ANSWER: Dye penetrant test**

**Explanation:**

No explanation is available for this question!

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**2) Non-destructive testing is used to determine**

- a. location of defects
- b. chemical composition
- c. corrosion of metal
- d. All of these

[Answer](#) [Explanation](#)

**ANSWER: All of these**

**Explanation:**

No explanation is available for this question!

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**3) Which among the following is not a type of Non-destructive testing?**

- a. compression test
- b. visual testing
- c. ultrasonic testing
- d. eddy current testing

[Answer](#) [Explanation](#)

**ANSWER: compression test**

**Explanation:**

No explanation is available for this question!

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**4) Identify the type of destructive testing**

- a. Radiographic test
- b. Dye penetrant test
- c. Creep test
- d. All of the above

[Answer](#) [Explanation](#)

**ANSWER: Creep test**

**Explanation:**

No explanation is available for this question!

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5) Which among the following is the last step in magnetic particle test method?

- a. observation and inspection
- b. circular magnetization
- c. demagnetization
- d. magnetization

[Answer](#) [Explanation](#)

**ANSWER: demagnetization**

**Explanation:**

No explanation is available for this question!

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6) Which of the following statements is/are true for ultrasonic test?

- a. Equipment used for ultrasonic testing is portable
- b. Complicated shapes can be easily scanned
- c. Waves generated are health hazardous
- d. All the above statements are true

[Answer](#) [Explanation](#)

**ANSWER: Equipment used for ultrasonic testing is portable**

**Explanation:**

No explanation is available for this question!

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7) During radiography test, which region absorbs less radiation and transmits more?

- a. Low and high density regions absorb and transmit same amount of radiation
- b. High density region
- c. Low density region
- d. None of the above

[Answer](#) [Explanation](#)

**ANSWER: Low density region**

**Explanation:**

No explanation is available for this question!

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**8) Which test is used to determine dimensions of any object?**

- a. Ultrasonic test
- b. Torsion test
- c. Eddy current test
- d. All of these tests can be used to determine dimensions of any object

[Answer](#) [Explanation](#)

**ANSWER: Eddy current test**

**Explanation:**

No explanation is available for this question!

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**9) Eddy current test is used to detect**

- a. cracks
- b. hardness
- c. conductivity
- d. All of the above

[Answer](#) [Explanation](#)

**ANSWER: All of the above**

**Explanation:**

No explanation is available for this question!

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**10) Which test can be performed without skilled labour?**

- a. Dye penetrant testing
- b. Visual testing
- c. Ultrasonic testing
- d. Magnetic particle test

[Answer](#) [Explanation](#)

**ANSWER: Dye penetrant testing**

**Explanation:**

No explanation is available for this question!

1. Nanomaterials are the materials with at least one dimension measuring less than \_\_\_\_\_

- a) 1 nm
- b) 10 nm
- c) 100 nm
- d) 1000 nm

View Answer

Answer: c

Explanation: A material with at least one of its dimensions measuring less than 100 nm (1 to 100nm) are classified as nanomaterials.

2. A material with one dimension in Nano range and the other two dimensions are large is called \_\_\_\_\_

- a) Micro-material
- b) Quantum wire
- c) Quantum well
- d) Quantum dot

View Answer

Answer: c

Explanation: Such a material with one dimension in Nano range and other two large is called quantum well. A material with two of the three dimensions in the nano range and third large is called quantum wire. When all the dimensions are in nano range, it is called quantum dot.

3. The colour of the nano gold particles is \_\_\_\_\_

- a) Yellow
- b) Orange
- c) Red
- d) Variable

View Answer

Answer: d

Explanation: The colour of the nano gold particle varies with the size of the particles. It shows different colours like orange, red, purple, or greenish.

4. The melting point of particles in nano form \_\_\_\_\_

- a) Increases
- b) Decreases
- c) Remains same
- d) Increases then decreases

View Answer

Answer: b

Explanation: For the particles in the nano form, the melting point reduces significantly. Other chemical properties are also changed as the dimensions of the object comes in the nano range.

5. The first talk about nano-technology was given by \_\_\_\_\_

- a) Albert Einstein
- b) Newton
- c) Gordon E. Moore

d) Richard Feynman

[View Answer](#)

Answer: d

Explanation: In 1959, Richard Feynman gave a speech in which he spoke of nano-science and nano-technology. He talked about the possibility of manipulating individual atoms and molecules.

6. Which of the processes of materials was not described as Nanotechnology?

a) Separation

b) Creation

c) Processing

d) Consolidation

[View Answer](#)

Answer: b

Explanation: Nanotechnology, as defined by Professor N. Taniguchi, consists of the processing, separation, consolidation and deformation of materials by one atom or by one molecule. It is used exclusively for the nanomaterials.

7. The initial tools used to help launch the nanoscience revolution were \_\_\_\_\_

a) Binoculars

b) Microscope

c) Scanning probe instruments

d) Interferometer

[View Answer](#)

Answer: c

Explanation: Scanning probe instruments were the initial tools used by the scientist. In these instruments, the probe slides along the surface of the specimen.

8. When semiconductors are reduced to nanometres they become pure conductors.

a) True

b) False

[View Answer](#)

Answer: b

Explanation: When semiconductors are reduced to the nano form their chemical properties change significantly and they become insulators, as there is no more space for free electrons to move.

9. The major difference between the nano materials compared to the bulk form is the big fraction of the total number of atoms on the surface.

a) True

b) False

[View Answer](#)

Answer: a

Explanation: As the bulk material is changed into nano form, the number of atoms on the surface turns out to be a large fraction of the total number of atoms present in the material. Due to this, the whole physical/chemical properties of the material changes.

10. The size of atoms is nearly \_\_\_\_\_

a) 0.01 nm

b) 0.1 nm

- c) 1 nm
- d) 10 nm

View Answer

Answer: b

Explanation: The size of the atoms is nearly 0.1 nm. The smallest naturally occurring atom, helium, is 0.1 nm in size. Thus, nanotechnology can be used to study their characteristics and properties or even control them.

1. Nanotechnology was brought into day light by delivering lectures by: ( )

- 1. Feymann
- 2. Einstein
- 3. Newton
- 4. Max Planck

2. Nanostructures have sizes in between: ( )

- 0. 1 and 100 Å
- 1. 1 and 100 nm
- 2. 100 and 1000 nm
- 3. None of the above

3. Nanotechnology deals with \_\_\_\_\_ of nanostructures into useful nanoscale devices such as electronic circuits and mechanical devices at the molecular level. ( )

- 0. the design
- 1. manufacturing
- 2. applications
- 3. all the above

4. Choose the correct statement: ( )

- 0. If we properly arrange carbon atoms in coal then it may become diamond
- 1. By rearranging atoms in sand, silicon chip can be made
- 2. Both a and b
- 3. None of the above

5. The probe of scanning tunneling microscope is as sharp as ( )

- 0. an atom at the tip
- 1. many atoms ...

4. The nano particles from iron and palladium are used to produce \_\_\_\_\_  
a) Magnets  
b) Magnetic lens  
c) Magneto meters  
d) Magnetic storage devices

[View Answer](#)

Answer: d

Explanation: The nano particles from iron and palladium were synthesized and they are used to produce the magnetic storage devices. They produce only tetra byte storage capabilities.

5. Nano particles target the rare \_\_\_\_\_ causing cells and remove them from blood.  
a) Tumour  
b) Fever  
c) Infection  
d) Cold

[View Answer](#)

Answer: a

Explanation: Nano particles target the rare tumour causing cells and remove them completely from the blood stream. They are also used in the many other drugs.

6. \_\_\_\_\_ is the field in which the nano particles are used with silica coated iron oxide iron oxide.  
a) Magnetic applications  
b) Electronics  
c) Medical diagnosis  
d) Structural and mechanical materials

[View Answer](#)

Answer: c

Explanation: Medical diagnosis is the field in which the nano particles are used with silica coated iron oxide iron oxide. They are embedded with magnetic colloidal particles sent into the blood stream.

7. DNA detection through the \_\_\_\_\_ by using the oligonucleotide functionalised gold nano crystals is developed.  
a) Colorimetric  
b) Diathermy  
c) Electro therapy  
d) Treatment tables

[View Answer](#)

Answer: a

Explanation: DNA detection through the colorimetric technique by using the oligonucleotide functionalised gold nano crystals is developed. The nano particles are where anti bodies react and binds the hormone and move rapidly.

8. Coating the nano crystals with the ceramics is carried that leads to \_\_\_\_\_

- a) Corrosion
- b) Corrosion resistant
- c) Wear and tear
- d) Soft

[View Answer](#)

Answer: b

Explanation: Coating the nano crystals with the ceramics is carried that leads to the corrosion resistant and hard and wear resistant and ambient ductility.

9. The \_\_\_\_\_ to the ceramics are superior coatings.

- a) Nano particles
- b) Nano powder
- c) Nano crystals coating
- d) Nano gel

[View Answer](#)

Answer: c

Explanation: The nano particles coatings to the ceramics are superior coatings. They make the ceramics corrosion resistant.

10. \_\_\_\_\_ of ceramic components are easier through nano structuring.

- a) Lubrication
- b) Coating
- c) Fabrication
- d) Wear

[View Answer](#)

Answer: c

Explanation: The fabrication of the ceramics is easier through the nano structuring. Fabrication is the process of producing the things.

11. By nano scale distribution of the \_\_\_\_\_ in matrix improves the life and performance.

- a) Carbide
- b) Tungsten
- c) Hydrides
- d) Nitrites

[View Answer](#)

Answer: b

Explanation: By the nano scale distribution of the tungsten in matrix. The matrix contains tungsten carbide that improves the life and performance of cutting tool materials.

12. Industrial catalysts should have \_\_\_\_\_ surface area.

- a) High
- b) Low
- c) Moderate
- d) No

[View Answer](#)

Answer: a

Explanation: Industrial catalysts should have the high surface area. They should also have the capacity to attach any material to their surface.

13. The extensively used nano particles as catalyst is \_\_\_\_\_

- a) Silver
- b) Copper
- c) Gold
- d) Cerium

[View Answer](#)

Answer: c

Explanation: The extensively used nano particles as catalyst are gold. Some of them are molybdenum, cerium oxide and nickel.

14. Due to \_\_\_\_\_ tensile strength some of the nano materials are used in air crafts.

- a) High
- b) Low
- c) Moderate
- d) No

[View Answer](#)

Answer: a

Explanation: Due to the high tensile strength some of the nano materials are used in air crafts. One of them is carbon nano tubes. They are used in the air crafts.

15. Fabrics are extensively made out of nano materials like \_\_\_\_\_

- a) Carbon nano tubes
- b) Fullerenes
- c) Mega tubes
- d) Polymers

[View Answer](#)

Answer: b

Explanation: Fabrics are extensively made out of nano materials like fullerenes. The sports gear

6. The colour of the nano gold particles is \_\_\_\_\_

- a) Yellow
- b) Orange
- c) Red
- d) Variable

[View Answer](#)

Answer: d

Explanation: The colour of the nano gold particle varies with the size of the particles. It shows different colours like orange, red, purple, or greenish.

7. On both ends of the CNTs, which carbon nanostructure is placed?

- a) Graphite
- b) Diamond
- c) C<sub>60</sub>
- d) Benzene

[View Answer](#)

Answer: c

Explanation: Carbon nanotubes, CNTs, are nanostructures with large application potential. Its structure consists of a single sheet of graphite rolled into a tube. The ends of the CNTs are capped with C<sub>60</sub> hemispheres.

8. When semiconductors are reduced to nanometres they become pure conductors.

- a) True
- b) False

[View Answer](#)

Answer: b

Explanation: When semiconductors are reduced to the nano form their chemical properties changes significantly and they become insulators, as there is no more space for free electrons to move.

9. Quantum dots can be used in \_\_\_\_\_

- a) Crystallography
- b) Optoelectronics
- c) Mechanics
- d) Quantum physics

[View Answer](#)

Answer: b

Explanation: Quantum dots are basically semiconductor nanoparticles that show a particular colour on illumination by a light. They have unique electrical and optical properties. Due to this, they are widely used in optoelectronics.

1. Which property of Nanomaterials make them suitable to be used for elimination of pollutants?

- a) High purity
- b) Better thermal conductivity
- c) Enhanced chemical activity
- d) Small size

[View Answer](#)

Answer: c

Explanation: Nanomaterials have enhanced chemical activity. Due to this, they can be used as catalysts to react with toxic gases such as CO and NO<sub>2</sub> in automobile catalytic converters.

2. Nano crystalline materials synthesised by sol-gel technique results in a foam like structures called \_\_\_\_\_

- a) Gel
- b) Aerosol
- c) Foam
- d) Aerogel

[View Answer](#)

Answer: d

Explanation: The foam-like material formed is called aerogel. They are porous and extremely lightweight, yet they can load equivalent to 100 times their weight. They are used as insulation materials.

3. Which nanomaterial is used for cutting tools?

- a) Fullerene
- b) Aerogel
- c) Tungsten Carbide
- d) Gold

[View Answer](#)

Answer: c

Explanation: Cutting tools made of Nano crystalline crystals like Tungsten carbide are much harder, much more wear-resistant and last longer than their conventional counterparts.

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4. Aerogels can hold more energy than the separators in batteries.

- a) True
- b) False

[View Answer](#)

Answer: a

Explanation: The energy density of a conventional battery is quite low. The Nano crystalline materials, as aerogels, have considerably more energy holding capacity.

5. A Carbon monoxide sensor made of zirconia uses which characteristic to detect any change?

- a) Capacitance
- b) Resistivity
- c) Activity
- d) Permeability

[View Answer](#)

Answer: c

Explanation: Zirconia uses its chemical activity to sense the presence of CO. In case CO is present, the oxygen atoms in zirconia would react with the carbon in CO to partially reduce Zirconium oxide.

6. Which components of an automobile are envisioned to be coated with zirconia?

- a) Spark plugs
- b) Liners
- c) Tyres
- d) Brakes

[View Answer](#)

Answer: b

Explanation: Zirconia is a hard and brittle ceramic. Its use in the coating of liners in an automobile is envisioned, as it can heat up the engine more effectively. Alumina can also be used for coating.

7. The main purpose of CNTs in fuel cells is \_\_\_\_\_

- a) Production of energy
- b) Active medium
- c) Catalyst
- d) Storage

[View Answer](#)

Answer: d

Explanation: Carbon nanotubes are useful in fuel cells as well as in batteries, primarily for storage purposes of hydrogen. The tubes need to hold 6.5% hydrogen by weight.

8. Zirconia is a hard, brittle \_\_\_\_\_

- a) Metal
- b) Non-metal
- c) Composite
- d) Ceramics

[View Answer](#)

Answer: d

Explanation: Zirconia is a ceramic and even has been rendered as superplastic. Usage of these nano crystals have been encouraged instead of the ceramics.

9. Nanoscale aluminium oxide increases the \_\_\_\_\_

- a) Conductivity
- b) Resistance
- c) Ductility
- d) Stability

[View Answer](#)

Answer: b

Explanation: Nanoscale aluminium oxide and titanium oxide are optically transparent and they greatly increase abrasion resistance of traditional coatings.

10. Quantum dots can be used in \_\_\_\_\_

- a) Crystallography
- b) Optoelectronics
- c) Mechanics
- d) Quantum physics

[View Answer](#)

Answer: b

Explanation: Inorganic nanomaterials, like quantum dots, can be used in optoelectronics because of their interesting optical and electrical properties.

3. The properties like melting point, solubility, color, etc changes on varying the \_\_\_\_\_

- a) Size
- b) Composition

- c) Surface properties
- d) None of the mentioned

[View Answer](#)

Answer: a

Explanation: The properties like melting point, solubility, color, etc changes on varying the size of the particles. These all are the physical properties and depends upon the physical characteristics of the particle.

4. The properties like dispersibility, conductivity, etc changes on varying the \_\_\_\_\_

- a) Size
- b) Composition
- c) Surface properties
- d) None of the mentioned

[View Answer](#)

Answer: c

Explanation: The properties like dispersibility, conductivity, etc changes on varying the surface properties of the nanoparticle. These all are the chemical properties and depend upon the surface characteristics of the particle.

5. Quantum confinement results in \_\_\_\_\_

- a) Energy gap in semiconductor is proportional to the inverse of the square root of the size
- b) Energy gap in semiconductor is proportional to the inverse of the size
- c) Energy gap in semiconductor is proportional to the square of size
- d) Energy gap in semiconductor is proportional to the inverse of the square of size

[View Answer](#)

Answer: d

Explanation: The energy gap in a semiconductor is proportional to the inverse of the square of the size. This effect is a result of quantum confinement.

6. Which of the following is the principal factor which causes the properties of nanomaterials to differ significantly from other materials?

- a) Size distribution
- b) Specific surface feature
- c) Quantum size effects
- d) All of the mentioned

[View Answer](#)

Answer: d

Explanation: Size distribution, specific surface feature and quantum size effects are the principal factor which causes the properties of nanomaterials to differ significantly from other materials.

7. Select the incorrect statement from the following options.

- a) Self-assembly is a top-down manufacturing technique
- b) In self-assembly, weak interactions play very important role
- c) Self-assembling molecules adopt an organised structure which is thermodynamically more stable than the single, unassembled components
- d) Compared to the isolated components, the self-assembled structure has a higher order

[View Answer](#)

Answer: a

Explanation: Self-assembly is a bottom-down manufacturing technique. All the other options are correct. In self-assembly, weak interactions play very important role, self-assembling molecules adopt an organised structure which is thermodynamically more stable than the single, unassembled components.

8. Which of the following is the application of nanotechnology to food science and technology?

- a) Agriculture
- b) Food safety and biosecurity
- c) Product development
- d) All of the mentioned

[View Answer](#)

Answer: d

Explanation: The application of nanotechnology to food science and technology are agriculture, food safety and biosecurity, product development, food processing and ingredient technologies.

9. What are the advantages of nano-composite packages?

- a) Lighter and biodegradable
- b) Enhanced thermal stability, conductivity and mechanical strength
- c) Gas barrier properties
- d) All of the mentioned

[View Answer](#)

Answer: d

Explanation: The advantages of nano-composite packages are-Lighter and biodegradable, enhanced thermal stability, conductivity, mechanical strength and gas barrier properties.

10. The efficiency of today's best solar cell is about \_\_\_\_\_

- a) 15-20%
- b) 40%
- c) 50%
- d) 75%

[View Answer](#)

Answer: b

Explanation: The efficiency of today's best solar cells is about 40%. A solar cell or photovoltaic cell is an electrical device that converts the energy of light directly into electricity by the photovoltaic effect.

12. Acoustic emission testing method is basically employed for the detection of surface discontinuities on the castings.

- a) True
- b) False

[View Answer](#)

Answer: b

Explanation: Acoustic emission testing method, in which solid materials emit sound or acoustic emission when they are stressed mechanically or thermally to the point where deformation or fracturing occurs. This creates elastic waves which can be analyzed by an

acoustic emission test system to monitor the condition of the material or casting under stress.

1. In non-destructive testing, sound test used is a very fine and accurate method of detecting flaws in the castings.

- a) True
- b) False

[View Answer](#)

Answer: b

Explanation: Sound test is a very rough test to indicate any flaws or discontinuities in the casting. The casting is suspended by suitable support and tapping is done at the surface of the casting with a hammer that makes a variation in the tone which indicates the existence of flaws. This method does not indicate the exact location and extent of the discontinuity in the casting.

2. Impact test for detection of defects in the casting is the most crude and unreliable method of non-destructive testing.

- a) True
- b) False

[View Answer](#)

Answer: a

Explanation: In the impact test, the casting is subjected to a blow by the help of a hammer of known weight, which basically strikes or falls on the surface of the casting. Defective castings fail due to the impact of the blow, but this method is very crude and unreliable to the material or casting which is inspected.

3. Which of the following methods of NDT requires leak proofing of casting before inspection?

- a) Impact test
- b) Visual inspection
- c) Sound test
- d) Pressure test

[View Answer](#)

Answer: d

Explanation: Pressure test used on castings required to be leak proof. In this method, all the openings of the casting are closed and then gas with high pressure is introduced in it. If the casting is having a porosity or another defect, then it can be detected by leaking of gas in the water when the casting is submerged into the water.

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4. Which of the following types of rays is used in radiography for the inspection of castings?

- a) X- rays
- b) Infrared rays
- c) Ultraviolet rays
- d) Visible rays

[View Answer](#)

Answer: a

Explanation: Radiography uses X-rays, these rays penetrate through the castings and

makes a shadow picture on a film which is placed behind the material. These rays have a very short wave length of the order of 0.001 Angstrom. And sometimes gamma rays are also used for the inspection of castings.

5. In radiography, the penetration of rays is much easier with the less density of metal or casting.

- a) True
- b) False

[View Answer](#)

Answer: a

Explanation: The ability of rays to penetrate through the metal mainly depends on the density of metal and they can penetrate more easily where less density of metal is present and it leads to the formation of shadow picture on the film. And any defects in the casting can easily be identified from the shadow picture.

6. In penetrant testing of NDT, a liquid is penetrated into the cracks of metal by the application of pressure.

- a) True
- b) False

[View Answer](#)

Answer: b

Explanation: Penetrant testing method is generally used for detecting very small surface cracks and it has an advantage over the magnetic particle method that it can be used for any material. A penetrant liquid is used which is drawn into the cracks or voids by means of capillary action. In this method, there is no requirement of pressure.

7. Which of the following methods of inspection uses high frequency of sound waves for the detection of flaws in the castings?

- a) Penetrant test
- b) Radiography
- c) Pressure test
- d) Ultrasonic inspection

[View Answer](#)

Answer: d

Explanation: Ultrasonic inspection is used to detect defects like cracks and porosity within the interior of the casting or material. This method uses reflection and transmission of high frequency sound waves, which are much higher than the audible range and then these waves are made pass through the casting for inspection.

1. Radiographic inspection use \_\_\_\_\_

- a) Sound waves
- b) AC
- c) X-rays
- d) Visible light

[View Answer](#)

Answer: c

Explanation: Radiographic inspection use very short wavelength electromagnetic radiations. These are X-rays and Y-rays.

2. The dark areas represent an object with \_\_\_\_\_

- a) Lower density
- b) High density
- c) Porosity
- d) Grain boundaries

[View Answer](#)

Answer: a

Explanation: The dark areas represent an object with lower density. This is because of less absorption of radiation. These parts may be porosity or voids.

3. The film in radiographic inspection is called \_\_\_\_\_

- a) Plate
- b) Radiograph
- c) Micrograph
- d) X-ray sheet

[View Answer](#)

Answer: b

Explanation: A photographic film is used on the other side of object. It is known as the radiograph. It is called xerograph if film is exposed to x-ray radiation.

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4. \_\_\_\_\_ produce light area on film.

- a) Inclusions
- b) Pores
- c) Voids
- d) Blow holes

[View Answer](#)

Answer: a

Explanation: Inclusions are denser than the surrounding material. These absorb more radiation than lower density areas. It hence produces light area on film.

5. Radiography don't give \_\_\_\_\_

- a) Thickness of material
- b) Hardness
- c) Blow holes in casting
- d) Pores in weldment

[View Answer](#)

Answer: b

Explanation: Radiography is used for detecting internal defects mainly. Blow holes, voids and porosity are best examples.

6. Planar defects can't be detected by radiography.

- a) True
- b) False

[View Answer](#)

Answer: b

Explanation: Radiographic inspection is mainly used for internal defect detection. Planar defects can also be detected by proper orientation.

7. The amount of absorption of rays depends on the density and thickness of the material.

- a) True
- b) False

[View Answer](#)

Answer: a

Explanation: Radiation is absorbed inside material based on thickness and density. Hence defects based on density variation are detected.

8. What is the wavelength of X-rays?

- a) 10 picometers
- b) 0.01 to 10 nanometers
- c) 10 to 400 nanometers
- d) 400 to 700 nanometers

[View Answer](#)

Answer: b

Explanation: X-rays are electromagnetic waves. These have a wavelength in range 0.01 to 10 nanometers. Y-rays have a wavelength less than 10 picometers.

1) Find the echo time of ultrasonic pulse which is traveling with the velocity  $3.1 \times 10^3$  m/s in mild steel. The correct thickness measured by gauss meter is 9 mm.

- a)  $5.8 \times 10^{-6}$   $\mu$  sec
- b)  $5.8 \times 10^{+6}$   $\mu$  sec
- c) **5.8  $\mu$  sec**

d) 5.8 sec

2) An ultrasonic pulse is sent through a block of steel. The echo is recorded after 1.512 microseconds. Calculate the thickness of the steel block and the wavelength of the pulse if the frequency of ultrasonic pulse is 100 kHz and velocity of ultrasonic in steel is 5900 m/s.

a) 0.059 cm

- b) 0.59 m
- c) 0.59 cm

d) **5.9 cm**

3) An ultrasonic pulse is sent through a copper block and echo is recorded after  $4\mu$ s. If velocity of ultrasonic waves in that metal is 5000 m/s, calculate the thickness of the copper block. At another location in same block echo is recorded after  $1.253\mu$ s. What is the location of flaw?

a) **0.313 cm**

b) 0.0313 m

c) 0.0313 cm

d) 0.313 m

4) An ultrasonic pulse of frequency 130 kHz is sent through a block of steel. The echo pulse is received after 1.695 microseconds. If velocity of ultrasonic wave in steel is 5900 m/s, calculate the thickness of the steel block and the wavelength of the pulse.

a) 4.5 m

b) **0.045 m**

c) 0.45 m

d) 0.45 cm