MCQs Related to the Article "19.1 RELATIVE MOTION"

The physics which deals best with behavior of microscopic particles moving with the speed of light is called:

(a) Microscopic Physics (b) Relativistic Mechanics
(c) Newtonian Mechanics (d) Classical Physics

MCQ # 1: (b)

MCQs Related to the Article "19.2 FRAMES OF REFERENCE"

1. **All motions are**

(a) Absolute (b) Uniform (c) Relative (d) Variable

2. **A coordinate system relative to which measurement are taken is known as:**

(a) Frame of reference (b) Infinity Point (c) Zero point (d) None of these

3. **A coordinate system in which a body moves with constant velocity as long as no force is acting on it is called**

(a) Accelerated frame of reference (b) Inertial frame of reference
(c) Non-inertial frame of reference (d) None of these

4. **The coordinate system in which law of inertia is valid is called:**

(a) Special frame of reference (b) Inertial frame of reference
(c) Non-Inertial frame of reference (d) Standard frame of reference

5. **Non-Inertial frame of reference has:**

(a) Zero Acceleration (b) Non-Zero Acceleration

MCQ # 1: (c)	MCQ # 2: (a)	MCQ # 3: (b)	MCQ # 4: (b)	MCQ # 5: (b)

MCQs Related to the Article "19.3 SPECIAL THEORY OF RELATIVITY"

1. **In 1905, the special theory of relativity was proposed by**

(a) Maxwell (b) De Broglie (c) Bohr (d) Einstein

2. **An observer shoots parallel to a meter stick at very high speed (relativistic) and finds that the length of meter stick is _____**

(a) Greater than one meter (b) Less than one meter
(c) One meter (d) None of these

3. **Using relativistic effects, the location of an aircraft after an hour's flight can be predicted about**

(a) 20 m (b) 50 m (c) 760 m (d) 780 m

4. **1 kg mass will be equivalent to energy:**

(a) $9 \times 10^{8} J$ (b) $9 \times 10^{12} J$ (c) $9 \times 10^{16} J$ (d) $9 \times 10^{20} J$

5. **The special theory of relativity is based on:**

(a) 1 postulate (b) 2 postulates (c) 3 postulates (d) 4 postulates

6. **The velocity at which the mass of the body becomes double is:**

(a) $\frac{\sqrt{3}}{2} c$ (b) $\frac{2}{\sqrt{3}} c$ (c) $\frac{\sqrt{3}}{4} c$ (d) c

7. **If the object moves with speed of light, its mass become:**

(a) Zero (b) Infinity (c) Remain same (d) Decreases

MCQ # 1: (d)	MCQ # 2: (b)	MCQ # 3: (b)	MCQ # 4: (c)	MCQ # 5: (b)	MCQ # 6: (a)	MCQ # 7: (b)

MCQs Related to the Article "19.4 BLACK BODY RADIATION"

1. **Energy of black body radiation depends upon:**

(a) Nature of the surface of body (b) Nature of material of the body
(c) Shape and size of the body (d) Temperature of the body

2. **When Platinum is heated, it becomes cherry red at:**

(a) 500°C (b) 900°C (c) 1100°C (d) 1300°C

3. **When Platinum is heated, it becomes orange at:**

(a) 500°C (b) 900°C (c) 1100°C (d) 1300°C

4. **Platinum wire becomes yellow at temperature of:**

(a) 900°C (b) 1100°C (c) 1300°C (d) 1600°C

5. **When Platinum is heated, it becomes white at:**

(a) 900°C (b) 1100°C (c) 1300°C (d) 1600°C

6. The relation $\lambda_{max}T = Constant$ is known as
(a) Wein's Law (b) Plank's Law (c) Stephen Law (d) None
7. As the temperature of black body is raised, the wavelength corresponding to maximum intensity
(a) Shifts towards longer wavelength (b) Shifts towards shorter wavelength
(c) Remains the same (d) None of these
8. The energy radiated is directly proportional to fourth power of Kelvin's temperature is ____
(a) Karl-wein's laws (b) Raleigh jeans law (c) Stephens law (d) Planck's
9. According to Stephen's law about black body radiations:
(a) $E \propto \frac{1}{T^2}$ (b) $E \propto T^2$ (c) $E \propto T^4$ (d) $E \propto T$
10. At low temperature, a body is usually emits radiation of:
(a) Long wavelength (b) Short Wavelength (c) Infinite Wavelength (d) None of these
11. The name of photon for quantum of light was proposed by
(a) Ampere (b) Planck's (c) Thomson (d) Einstein
12. The units of Plank's constant are same as that of:
(a) Energy (b) Power (c) Angular frequency (d) Angular momentum
13. The value of Plank's constant h is equal to:
(a) $6.63 \times 10^{-34}\ Js$ (b) $6.63 \times 10^{-30}\ Js$ (c) $6.63 \times 10^{-31}\ Js$ (d) $6.63 \times 10^{34}\ Js$
14. Linear momentum of a photon is
(a) Zero (b) hf/c (c) hf/c (d) c

MCQ # 1: (d)	MCQ # 2: (b)	MCQ # 3: (c)	MCQ # 4: (c)	MCQ # 5: (d)	MCQ # 6: (a)	MCQ # 7: (b)
MCQ # 8: (c)	MCQ # 9: (c)	MCQ # 10: (a)	MCQ # 11: (d)	MCQ # 12: (d)	MCQ # 13: (a)	MCQ # 14: (b)

MCQs Related to the Article "PHOTOELECTRIC EFFECT"

1. The light of suitable frequency falling on metal surface ejects electrons, this phenomenon is called
(a) X-ray emission (b) Compton effect (c) Photoelectric effect (d) Nuclear fission
2. Photoelectric effect was explained by
(a) Hertz (b) Einstein (c) Rutherford (d) Bohr
3. In order to increase the K.E of ejected photoelectrons, there should be an increase in:
(a) Frequency of light (b) Intensity of light (c) Both a & b (d) None of these
4. The amount of energy required to eject an electron from metal surface is called:
(a) Threshold frequency (b) Work function (c) Compton Shift (d) Pair production
5. Photon 'A' has twice the energy of photon 'B'. What is the ratio of the momentum of 'A' to that of 'B'?
(a) 4 : 1 (b) 8 : 1 (c) 1 : 2 (d) 2 : 1
6. Stopping potential for a metal surface in case of photo electric emission depends on
(a) The threshold frequency for the metal surface (b) The intensity of incident light
(c) The frequency of incident light and the work function for metal surface (d) None of these
7. At stopping potential V_o, the current passing through circuit is:
(a) Minimum (b) Maximum (c) Zero (d) None of these
8. The number of electrons emitted depends upon
(a) Color of target surface (b) Shape of the surface
(c) Frequency of incident light (d) Intensity of incident light
9. The unit of work function is:
(a) Volt (b) eV (c) Farad (d) Hertz
10. Application of photoelectric effect is
(a) Photo diode (b) Photo transistor (c) Photocell (d) None of these
11. Potassium cathode in photocell emits electrons for a light that is:
(a) X-rays (b) Infrared (c) Ultraviolet (d) Visible
12. Wave nature of light appears in:
(a) Pair production (b) Compton Effect (c) Photoelectric effect (d) Interference

MCQ # 1: (c)	MCQ # 2: (b)	MCQ # 3: (a)	MCQ # 4: (b)	MCQ # 5: (d)	MCQ # 6: (c)
MCQ # 7: (c)	MCQ # 8: (d)	MCQ # 9: (b)	MCQ # 10: (a)	MCQ # 11: (d)	MCQ # 12: (d)

MCQs Related to the Article "COMPTON EFFECT"

1. Compton's effect is associated with:
(a) Gamma Rays (b) X-rays (c) Beta Rays (d) Positive Rays

2. In Compton effect, the law/laws are conserved

(a) Energy (b) Momentum (c) Both (d) None of these

3. The change in wavelength of scattered photon in Compton's effect is:

(a) $\frac{m_o}{hc}(1-\cos\theta)$ (b) $\frac{h}{m_o c^2}(1-\cos\theta)$ (c) $\frac{h}{m_o c}(1+\cos\theta)$ (d) $\frac{h}{m_o c}(1-\cos\theta)$

4. The factor $\frac{h}{m_o c}$ in Compton equation has dimensions of:

(a) Pressure (b) Length (c) Mass (d) Momentum

5. Compton shift is equal to Compton's wavelength when the scattered X-ray photons are observed at an angle:

(a) 0° (b) 45° (c) 60° (d) 90°

6. Compton's shift in the wavelength $\Delta\lambda$ is zero, when scattered angle of photon is

(a) 0°C (b) 90°C (c) 180°C (d) 45°C

7. A maximum Compton shift in the wavelength of scattered photon will be occur at

(a) $\theta = 0°$ (b) $\theta = 45°$ (c) $\theta = 90°$ (d) $\theta = 180°$

8. Compton's Effect proves:

(a) Wave nature of radiation (b) Wave nature of particle

(c) Dual nature of matter (d) Particle nature of radiation

MCQ # 1: (b)	**MCQ # 2: (c)**	**MCQ # 3: (d)**	**MCQ # 4: (b)**
MCQ # 5: (d)	**MCQ # 6: (a)**	**MCQ # 7: (d)**	**MCQ # 8: (d)**

MCQs Related to the Article "PAIR PRODUCTION"

1. Photon with energy greater than 1.02 MeV can interact with matter as

(a) Photoelectric effect (b) Compton effect (c) Pair production (d) Pair annihilation

2. The minimum energy needed for a photon to create an electron-positron pair is

(a) 1.02 KeV (b) 0.51 KeV (c) 0.51 MeV (d) 1.02 MeV

3. The rest mass energy of an electron in MeV is equal to

(a) 0.511 (b) 0.611 (c) 0.902 (d) 1.02

4. The anti-particle of electron is

(a) Proton (b) Position (c) Meson (d) Neutron

5. The energy of each positron is given by:

(a) 1.2 MeV (b) 1.02 MeV (c) 0.51 MeV (d) 5.1 MeV

6. The rest mass energy of and electron-positron pair is:

(a) 1.2 MeV (b) 1.02 MeV (c) 0.51 MeV (d) 5.1 MeV

7. Pair production is also called:

(a) Pair annihilation (b) Materialization of energy

(c) Fusion Reaction (d) Fission Reaction

8. The condition $hf > 2m_o c^2$ refers to:

(a) Compton effect (b) Pair Production

(c) Photoelectric effect (d) Annihilation of matter

MCQ # 1: (c)	**MCQ # 2: (d)**	**MCQ # 3: (a)**	**MCQ # 4: (b)**
MCQ # 5: (c)	**MCQ # 6: (b)**	**MCQ # 7: (b)**	**MCQ # 8: (b)**

MCQs Related to the Article "19.6 ANNIHILATION OF MATTER"

1. When an electron combines with a positron, we get

(a) One photon (b) Two photons (c) Three photons (d) Four photons

2. Electron is an antiparticle of

(a) Proton (b) Photon (c) Positron (d) Deuteron

3. A positron is a particle having

(a) Mass equal to electron (b) Charge equal to electron

(c) Equal mass but opposite charge to electron (d) Mass equal to proton

4. The reverse process of pair-production is

(a) Annihilation (b) Materialization (c) Fission (d) Fusion

5. Neutron was discovered in 1932 by

(a) Bohr (b) Chadwick (c) Dirac (d) Fermi

MCQ # 1: (b)	**MCQ # 2: (c)**	**MCQ # 3: (c)**	**MCQ # 4: (a)**	**MCQ # 5: (b)**

MCQs Related to the Article "19.7 WAVE NATURE OF PARTICLES"

1. Who gave the idea of matter wave?

(a) De-Broglie (b) Planck (c) Einstein (d) Huygen

2. Wavelength λ associated with the particle with the particle of mass m and moving with velocity v is:

(a) $\frac{mv}{h}$ (b) $\frac{hv}{m}$ (c) $\frac{h}{mv}$ (d) $\frac{m}{hv}$

3. Davisson and Germer indicates _____ in their experiment

(a) Electron refraction (b) Electron polarization

(c) Electron reflection (d) Electron diffraction

4. In Davison – Germer experiment, the diffracted electron from crystal shows _____

(a) Particle property (b) Wave property (c) Light property (d) Quantum property

5. In electron microscope, electric and magnetic field are used as _____

(a) Electromagnetic gun (b) Source of electromagnetic waves

(c) Deflected charged particle (d) Converging source of electrons

6. _____ has the largest de Broglie wavelength at same speed.

(a) Proton (b) α −particle (c) Neutron (d) Electron

MCQ # 1: (a)	MCQ # 2: (c)	MCQ # 3: (d)	MCQ # 4: (b)	MCQ # 5: (d)	MCQ # 6: (d)

MCQs Related to the Article "19.8 UNCERTAINTY PRINCIPLE"

The uncertainty in momentum and position is due to its _____

(a) Emotion of certain wave length (b) Two dimensional motions

(c) Property of matter and radiation (d) Very high velocity

MCQ # 1: (c)