

PHY101

1. Suitable units for the gravitational constant G are:

- $\text{N}\cdot\text{s}/\text{m}$
- $\text{m}^3/(\text{kg}\cdot\text{s}^2)$
- m/s^2
- $\text{kg}\cdot\text{m}/\text{s}^2$

Correct Answer: $\text{kg}\cdot\text{m}/\text{s}^2$

2. Electric energy is measured:

- Watt
- Horsepower
- Kilowatt hour
- Kilowatt

Correct Answer: Kilowatt hour

3. What is the unit of self-inductance?

- Gauss (G)
- Tesla (T)
- Weber (Wb)
- Henry (H)

Correct Answer: Henry (H)

4. Which of the following statements is NOT TRUE about electromagnetic waves?

- Electromagnetic waves cannot travel through space.
- The electromagnetic radiation from a burning candle is unpolarized.
- The reception of electromagnetic waves requires an antenna.
- Electromagnetic waves satisfy Maxwell's Equations.

Correct Answer: Electromagnetic waves cannot travel through space.

5. If the potential difference across two plates of a capacitor is doubled, then the energy stored in it will be:

- Eight times
- Four times
- Two times
- Remains the same

Correct Answer: Four times

6. A wave that moves back and forth in a leftward and rightward direction is known as a _____.
(Note: The options are repeated)

- Transverse
- Transverse
- Electromagnetic
- Longitudinal

Correct Answer: Longitudinal

7. The combined effect of resistance and reactance is known as:

- Conductance
- Impedance
- Impedance

Correct Answer: Impedance

8. A whistle producing sound waves of frequencies 9500 Hz and above is approaching a stationary person with speed v m/s. The velocity of sound in air is 300 m/s. If the person can hear frequencies up to 10000 Hz, the maximum value of v up to which he can hear the whistle is:

- 1.5
- 1.4
- 1.45
- 1.2

Correct Answer: 1.45

9. In the wave equation $y(x,t) = A \sin(kx - \omega t)$, what do k and ω represent?

- Phase constant
- Wavelength and frequency
- Amplitude and intensity

Correct Answer: Wavelength and frequency

10. As per Coulomb's law, the force of attraction or repulsion between two point charges is directly proportional to the:

- Sum of the magnitude of charges
- Square of the distance between them
- Product of the magnitude of charges
- Cube of the distance

Correct Answer: Product of the magnitude of charges and inversely proportional to the square of the distance between them.

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1. The dimensions of Force (F) are:

- $[M L^2 T^{-3}]$
- $[M L T^{-2}]$
- $[M L^2 T^{-1}]$
- $[M L^2 T^{-2}]$

Correct Option: $[M L^2 T^{-2}]$

2. When a body moves with constant acceleration, the velocity-time graph is:

- Hyperbola Curve
- Straight line
- Parabola

Correct Option: Parabola

3. There is a temperature at which the reading on the Kelvin scale is numerically:

- Less than zero
- Equal to that on the Celsius scale
- Lower than that on the Celsius scale
- Equal to that on the Fahrenheit scale

Correct Option: Lower than that on the Celsius scale

4. If the temperature in Celsius is 20°C , what would it be in Fahrenheit?

- 68°F
- 36°F
- 56°F
- 44°F

Correct Option: 68°F

5. If the area of a surface is doubled while keeping the force constant, what happens to the pressure?

- It remains constant
- It halves
- It doubles
- It quadruples

Correct Option: It halves

6. The forces acting on an electron in Bohr's hydrogen atomic model will be:

- Electrostatic and centrifugal forces
- Gravitational forces

- Nuclear forces
- Electromagnetic forces

Correct Option: Electrostatic and centrifugal forces

7. If the sum of the total external forces acting on a system of particles is zero, what can be concluded about the total momentum?

- Total momentum increases
- Total momentum decreases
- Total momentum becomes zero
- Total momentum is constant

Correct Option: Total momentum is constant

8. Heat is:

- Energy transferred by virtue of a temperature difference
- Energy transferred by macroscopic work
- A temperature difference
- Energy content of an object

Correct Option: Energy transferred by virtue of a temperature difference

9. Earth has an orbital period of 365 days and its mean distance from the Sun is 1.495×10^8 km. The planet Pluto's mean distance from the Sun is 5.896×10^9 km. Using Kepler's third law, Pluto's orbital period in Earth days will be:

- 9,000 days
- 450 days
- 4,500 days
- 90,000 days

Correct Option: 90,000 days

10. Let Z denote the atomic number and A denote the mass number of a nucleus. The number of neutrons in this nucleus is:

- A - Z
- A - 2Z
- Z
- A

Correct Option: A – Z

1. Which of the following statement is TRUE of sound intensity and decibel levels?

Options:

A. Sound A is 20 times more intense than sound B. So if Sound B is rated at 30 dB, then sound A is rated at 50 dB.

B. The intensity of sound which corresponds to the threshold of pain is one trillion times more intense than the sound which corresponds to the threshold of hearing.

C. Two sounds which have a ratio of decibel ratings equal to 2.0. This means that the second sound is twice as intense as the first sound.

D. A machine produces a sound which is rated at 60 dB. If two of the machines were used at the same time, the decibel rating would be 120 dB.

Correct Options: A, B, C, D

2. The potential difference between the ends of a conductor is 12 V. How much electrical energy is converted to other forms of energy in the conductor when 100 C of charge flows through it?

Options:

A. 0.12 J

B. 88 J

C. 1200 J

D. 8.3 J

Correct Option: C

3. What is the direction of the area vector for a flat surface in the context of magnetic flux?

Options:

A. Directed randomly

- B. Parallel to the surface
- C. Tangential to the surface
- D. Perpendicular to the surface

Correct Option: D

4. A whistle producing sound waves of frequencies 9500 Hz and above is approaching a stationary person with speed $v \text{ ms}^{-1}$. The velocity of sound in air is 300 ms^{-1} . If the person can hear frequencies up to 10000 Hz, the maximum value of v up to which he can hear the whistle is.

Options:

- A. 1.4 m/s
- B. 1.5 m/s
- C. 1.4 m/s
- D. 1.2 m/s

Correct Option: A

5. How does the period (T) change if the linear speed (v) is doubled while keeping radius (R) of the circular path constant?

Options:

- A. Cannot be determined
- B. Increases
- C. Remains the same
- D. Decreases

Correct Option: C

6. The primary purpose of the equation of state in thermodynamics is:

Options:

- A. To relate thermodynamic variables like P , V , and T
- B. To determine the path variables
- C. To define the system's internal energy
- D. To explain the conservation of energy

Correct Option: A

7. If the voltage in a circuit is 10 volts and the resistance is 5 ohms, what is the power consumed?

Options:

- A. 2 watts
- B. 50 watts
- C. 10 watts
- D. 20 watts

Correct Option: D

8. An erect object is in front of a convex mirror a distance greater than the focal length. The image is:

Options:

- A. Real, inverted, and larger than the object
- B. Virtual, inverted, and larger than the object
- C. Real, inverted, and smaller than the object
- D. Virtual, erect, and smaller than the object

Correct Option: D

9. A generator supplies 100V to the primary coil of a transformer. The primary has 50 turns and the secondary has 500 turns. The secondary voltage is:

Options:

- A. 100V
- B. 250V
- C. 500V
- D. 1000V

Correct Option: D

1. The specific heat of a substance is:

- A. The amount of heat energy per unit mass to raise the temperature of the substance by 1°C .

- B. The amount of heat energy per unit mass emitted by oxidizing the substance.
- C. The amount of heat energy per unit mass to raise the substance from its freezing to its boiling point.
- D. The amount of heat energy to change the state of one gram of the substance.

Correct Answer: A

2. Consider two objects, A and B, with the same mass. Object A is moving at a higher velocity than object B. Which of the following statements is true regarding their momenta?

- A. Object A and B have the same momentum.
- B. Object B has greater momentum than object A.
- C. Object A has greater momentum than object B.
- D. The momentum of each object depends on their shape.

Correct Answer: C

3. A 10N centripetal force is acting on a body to move in a circular path of radius 5 m. The work done by the centripetal force is _____ J.

- A. 0 J
- B. 15 J
- C. 50 J
- D. None of the above

Correct Answer: A

4. In special relativity, if the invariant interval is positive, it implies:

- A. The events are simultaneous.
- B. The events are lightlike separated.
- C. The events are timelike separated.
- D. The events are spacelike separated.

Correct Answer: C

5. If I_0 is the peak value of an AC supply, then its rms value is given as I_{rms} :

- A. $\sqrt{2} I_0$
- B. $I_0/2$
- C. $I_0/0.707$
- D. $I_0/\sqrt{2}$

Correct Answer: D

6. The waves used by artificial satellites for communication is:

- A. Radio waves
- B. Microwaves
- C. X-rays
- D. Infrared waves

Correct Answer: B

7. According to the first law of thermodynamics, applied to a gas, the increase in the internal energy during any process:

- A. Equals the work done on the gas minus the heat input.
- B. Equals the heat input plus the work done on the gas.
- C. Is independent of the work done on the gas.
- D. Equals the heat input minus the work done on the gas.

Correct Answer: B

8. Why does sound travel faster in solids than in gases?

- A. Solids have more particles per unit volume.
- B. Solids have a higher temperature.
- C. Gases have a higher elasticity.
- D. Gases have a higher density.

Correct Answer: D

9. Electric field due to an infinite sheet of charge is:

- A. φ/ϵ_0
- B. $\sigma/2\epsilon_0$
- C. $\varphi/2\epsilon_0$
- D. σ/ϵ_0

Correct Answer: B

10. Final take-off velocity of an airplane is 67 m/s. The length of runway is 2 km, the constant acceleration is:

- A. 2.24 m/s²
- B. 2.24 m/s⁻¹
- C. 3.24 m/s²
- D. 3.24 m/s⁻²

Correct Answer: C

1. A physical pendulum has a large moment of inertia (I). How does this affect the oscillating frequency (ω) of a physical pendulum?

Options:

- Increase the frequency.
- Decrease the frequency. (Correct)
- The frequency remains constant.
- Frequency is independent of the moment of inertia.

2. If the current through the conductor is doubled while the radius of the circular loop remains constant, what happens to the magnetic field according to Ampère's law?

Options:

- Magnetic field quadruples.
- Magnetic field doubles.
- Magnetic field remains the same. (Correct)
- Magnetic field is halved.

3. If you double the height of an object above the Earth's surface, how does the gravitational potential energy change?

Options:

- It becomes zero
- It remains constant
- It halves
- It doubles (Correct)

4. When a particle moving along a circular path, its projection along the diameter executes:

Options:

- Simple harmonic motion. (Correct)
- Linear motion
- Rotatory motion
- Vibratory motion

5. Why does the entropy of a gas increase when it is heated?

Options:

- Atoms move faster. (Correct)
- Atoms collide less frequently.
- Atoms move slower.

6. If the distance from the center of mass to the axis of rotation (d) is halved, how will this change affect the period of oscillation (T) of a physical pendulum?

Options:

- It will increase by a factor of $\sqrt{2}$
- It will remain the same
- It will decrease by a factor of $\sqrt{2}$. (Correct)
- It does not depend on d

7. What does it mean for a wave to be coherent?

Options:

- A wave with the same intensity
- A wave with varying frequency
- A wave with the same speeds
- A wave with a constant phase (Correct)

8. What is the dimension of angular acceleration?

Options:

- $[T^{-2}]$ (Correct)
- $[LT^2]$
- $[LT^{-2}]$
- $[LT^{-1}]$

9. In a system involving a massless rope and a massive rope, both under tension, which of the following statements is true regarding their effect on acceleration?

Options:

- The system with the massless rope.
- The system with the massive rope.
- The acceleration cannot be determined without additional information.
- Both systems will have the same acceleration. (Correct)

10. Following are the ways by which light can interact with matter, EXCEPT:

Options:

- Absorption
- Interference (Correct)
- Emission
- Transmission

1. What is $x(t)$ in the context of a body's position over time?

Options:

- A. A constant value
- B. A variable representing time. (Correct Option)
- C. A physical constant
- D. A mathematical constant

2. How is torque related to the direction of rate change in angular momentum?

Options:

- A. Torque and angular momentum have opposite directions.
- B. Torque has no effect on the direction of angular momentum.
- C. Torque and angular momentum have the same direction. (Correct Option)
- D. The relationship depends on the mass of the rotating object.

3. How is the potential difference related to the electric field in a capacitor?

Options:

- A. Inversely proportional
- B. Exponential relationship
- C. Directly proportional. (Correct Option)
- D. Unrelated

4. The angular momentum vector of Earth about its rotation axis, due to its daily rotation, is directed:

Options:

- A. Tangent to the equator toward the east. (Correct Option)
- B. Tangent to the equator toward the west
- C. South
- D. North

5. Which of the following statements is true regarding work done?

Options:

- A. Work can be positive, negative, or zero, depending on the situation. (Correct Option)
- B. Work is always zero if the force is not constant.
- C. Work is always positive, regardless of the force and displacement.
- D. Work is always negative, regardless of the force and displacement.

6. How does the modern view differ from the ancient view when it comes to the behavior of objects in motion?

Options:

- A. The ancient view believes that objects tend to accelerate, while the modern view believes they tend to decelerate.
- B. The ancient view focuses on the concept of inertia, while the modern view does not.
- C. Both views are essentially the same.
- D. The modern view emphasizes the need for force to maintain motion, while the ancient view emphasizes the tendency of objects to stop. (Correct Option)

7. The waves used by artificial satellites for communication are:

Options:

- A. Infrared waves
- B. Microwaves
- C. Radio waves. (Correct Option)
- D. X-rays

8. Which of the following statements is true?

Options:

- A. Stress is directly proportional to the square of the strain stated by Hooke's law.
- B. Stress is directly proportional to the strain stated by Newton's law.
- C. Stress is directly proportional to the strain stated by Hooke's law. (Correct Option)
- D. Stress is directly proportional to the square of the strain stated by Pascal's law.

9. If one mass is much larger than the others in a system, where is the center of mass?

Options:

- A. Closer to the larger mass. (Correct Option)
- B. Closer to the smaller masses.
- C. In the center of the larger mass.
- D. At an equal distance from all masses.

10. Which experiment confirmed the wave-like nature of electrons?

Options:

- A. Planck-Germer Experiment
- B. De Broglie Photoelectric Experiment
- C. Bohr-Einstein Experiment
- D. Davison-Germer Experiment (Correct Option)

1. Total internal reflection is possible when a light ray travels from:

Options:

- A. Glass to water
- B. Air to water
- C. Water to glass
- D. Air to glass

Correct Option: C

2. In case of metallic conductors, the charge carriers are:

Options:

- A. Protons and neutrons
- B. Electrons
- C. Neutrons
- D. Electrons and neutrons

Correct Option: B

3. The relationship between the linear and volumetric expansion coefficients is:

Options:

A. $\alpha = 3\beta$

B. $\alpha = \beta^3$

C. $\beta = \alpha^3$

D. $\beta = 3\alpha$

Correct Option: D

4. The electric potential at the center of a dipole is:

Options:

A. Same as field of point charge

B. Zero

C. Twice of field of point charge

D. Maximum

Correct Option: B

5. How do rays reflect off a concave lens compared to a convex lens?

Options:

A. No change

B. Converge

C. Diverge

D. Scatter

Correct Option: C

6. When an object reflects or emits light equally across all wavelengths, it appears _____ to our eyes?

Options:

- A. White
- B. Red
- C. Green
- D. Black

Correct Option: A

7. In a rainy day, small oil films on water show brilliant colors. This is due to the phenomenon of:

Options:

- A. Diffraction
- B. Interference
- C. Polarization
- D. Dispersion

Correct Option: B

8. Which one of the following is the velocity of a carrier wave?

Options:

- A. 3×10^6 m/s
- B. 3×10^9 m/s
- C. 3×10^{10} m/s
- D. 3×10^8 m/s

Correct Option: D

9. When are eddy currents typically induced in a conductor?

Options:

- A. When there is no magnetic field
- B. When exposed to a changing magnetic field
- C. In the presence of a strong magnetic field
- D. In the presence of a constant magnetic field

Correct Option: B

10. If the gravitational potential at a certain height is zero, what can you conclude about the gravitational potential energy at that height?

Options:

- A. It is also zero
- B. It is positive
- C. It cannot be determined
- D. It is infinite

Correct Option: A

1. What is the charge density for a volume charge distribution?

Options:

- $dq = \sigma dV$
- $dq = dA$
- $dq = \rho dV$ (Correct)
- $dq = \lambda ds$

2. The efficiency of a heat engine is always less than one because:

Options:

- The temperature of the reservoirs is constant.
- Heat is converted entirely into work.
- Some work is always lost as heat.
- Some heat is always lost to the surroundings. (Correct)

3. The gravitational constant G has the derived units:

Options:

- $N \cdot kg/m$
- $N \cdot m^2/kg^2$ (Correct)
- $N \cdot m$

- $\text{N}\cdot\text{m}/\text{kg}$

4. What is the unit of charge distribution for linear density?

Options:

- Coulomb / length^2
- Length / Farad
- length / Coulomb
- Coulomb / length (Correct)

5. If the mass of the Earth is increased, what will be the effect on gravitational potential?

Options:

- Increased (Correct)
- Decreased
- May be increase or decrease
- No effect on gravitational potential

6. A step-down transformer is used to:

Options:

- Decrease the voltage (Correct)
- Decrease the power
- Increase the voltage
- Increase the power

7. What does it mean for a wave to be coherent?

Options:

- A wave with varying frequency
- A wave with a constant phase (Correct)
- A wave with the same speeds
- A wave with the same intensity

8. If the energy of a photon is E , it is equivalent to mass:

Options:

- Ec^2 (Correct)
- E/c^2
- Ec^2/E
- E

9. If two objects are in thermal equilibrium with each other:

Options:

- They cannot be moving
- They cannot have different pressures
- They cannot be at different temperatures (Correct)
- They cannot be undergoing an elastic collision

10. Electromagnetic waves do not transport:

Options:

- Information
- Charge
- Momentum
- Energy (Correct)

1. Schwarzschild radius of a black hole related to:

Options:

- Mass of the black hole
- Gravitational constant
- Orbital velocity
- Escape velocity

Correct Option: Escape velocity

2. The type of microscope that uses a single convex lens to magnify objects is:

Options:

- Electron microscope
- Simple microscope
- Compound microscope
- Telescope

Correct Option: Simple microscope

3. Suitable units for the gravitational constant G are:

Options:

- $\text{N}\cdot\text{s}/\text{m}$
- m/s^2
- $\text{m}^3/(\text{kg}\cdot\text{s}^2)$
- $\text{kg}\cdot\text{m}/\text{s}^2$

Correct Option: $\text{m}^3/(\text{kg}\cdot\text{s}^2)$

4. If two capacitors, each with a capacitance of 100 microfarads, are connected in parallel, what is the total capacitance?

Options:

- 50 microfarads
- 100 microfarads
- 200 microfarads
- 150 microfarads

Correct Option: 200 microfarads

5. Which of the following best describes the nature of light?

Options:

- Light is an electromagnetic wave.

- Light is composed of aether particles.
- Light is a longitudinal wave.
- Light is composed of electrons only.

Correct Option: Light is an electromagnetic wave.

6. The electric potential at the center of a dipole is:

Options:

- Maximum
- Same as the field of a point charge
- Twice of the field of a point charge
- Zero

Correct Option: Zero

7. When an iron rod is heated, the colors at different temperatures are noted. Which of the following colors shows that the iron rod is at the lowest temperature?

Options:

- White
- Orange
- Red
- Blue

Correct Option: Red

8. The focal length of a convex lens is:

Options:

- Small
- Positive
- Negative
- Large

Correct Option: Positive

9. A transparent refracting medium bounded by the two curved surfaces called:

Options:

- Mirror
- Prism
- Glass
- Lens

Correct Option: Lens

10. Following are the ways by which light can interact with matter, EXCEPT:

Options:

- Interference
- Absorption
- Emission
- Transmission

Correct Option: Transmission

MCQ 1:

Which of the following is not a characteristic of mechanical waves?

Options:

- A. They transport energy.
- B. They are created by a vibrating source.
- C. They consist of disturbances or oscillations of a medium.
- D. They travel in a direction which is at right angles to the direction of the particles of the medium.

Correct Option: D

MCQ 2:

The relation for converting the temperature scale from Celsius to Fahrenheit is:

Options:

A. $F = (C \times 9/5) + 32$

B. $C = (F - 32) \times 5/9$

C. $F = (C + 32) \times 5/9$

D. $F = (C - 32) \times 9/5$

Correct Option: A

MCQ 3:

According to the Stefan-Boltzmann Law, what is the relationship between the power radiated per unit area (P) and the temperature (T) of a hot body?

Options:

A. $P \propto T^4$

B. $P \propto T^2$

C. $P \propto T$

D. $P \propto T^{-1}$

Correct Option: A

MCQ 4:

The two metallic strips that constitute some thermostats must differ in:

Options:

A. Coefficient of linear expansion

B. Thickness

C. Length

D. Mass

Correct Option: A

MCQ 5:

The unit of thermal conductivity might be:

Options:

A. $\text{Cal}/(\text{cm} \cdot \text{s} \cdot ^\circ\text{C})$

B. $^{\circ}\text{C}/(\text{cal}\cdot\text{cm}\cdot\text{s})$

C. $\text{Cal}\cdot\text{s}/(\text{cm}\cdot^{\circ}\text{C})$

D. $\text{Cal}\cdot\text{cm}/(\text{s}\cdot^{\circ}\text{C})$

Correct Option: D

MCQ 6:

If an electron of charge e is accelerated through a potential difference V , it will acquire energy:

Options:

A. Ve

B. $V/2$

C. $eV/2$

D. eV

Correct Option: D

MCQ 7:

Electromagnetic waves are transverse in nature, as evident by the phenomenon of _____.

Options:

A. Interference

B. Polarization

C. Diffraction

D. Reflection

Correct Option: B

MCQ 8:

Which of the following statements accurately describes the relationship between the wavelength (λ) and temperature (T) according to Wien's displacement law?

Options:

A. The wavelength increases with temperature.

B. The wavelength is independent of temperature.

C. The wavelength decreases with temperature.

D. Undetermined

Correct Option: C

MCQ 9:

Which of the following devices work on the principle of interference of light?

Options:

A. Telescope

B. Compound microscope

C. Young's double slit experiment

D. Newton rings apparatus

Correct Option: C

MCQ 10:

Energy density in the case of a capacitor is always proportional to:

Options:

A. CV^2

B. C^2V

C. V^2

D. E^2

Correct Option: A

1. What is the escape velocity from Earth's surface?

Options:

A. 11.2 km/s

B. 618 m/s

C. 11.2 km/h

D. 11.2 m/s

Correct Option: A

2. In a vacuum, the conduction current is _____:

Options:

- A. Infinity
- B. Unity
- C. Zero
- D. Undetermined

Correct Option: C

3. A transformer is employed to:

Options:

- A. Convert A.C. into D.C.
- B. Obtain a suitable D.C. voltage.
- C. Obtain a suitable A.C. voltage.
- D. Convert D.C. into A.C.

Correct Option: C

4. Work done between two points on an equipotential surface is _____:

Options:

- A. Maximum
- B. Negative
- C. Zero
- D. Infinite

Correct Option: C

5. If 500 J of heat is added to a substance and its temperature increases by 5°C , what is its heat capacity?

Options:

- A. $505\text{ J}/^{\circ}\text{C}$
- B. $105\text{ J}/^{\circ}\text{C}$

C. $500 \text{ J/}^\circ\text{C}$

D. $500 \text{ J/}^\circ\text{C}$

Correct Option: A

6. Capacitance of a capacitor in a vacuum is given by:

Options:

A. Ad/ϵ_0

B. $A\epsilon_0/d$

C. $A/\epsilon_0 d$

D. $A/\epsilon_r d$

Correct Option: B

7. What does the electric potential due to a dipole depend on?

Options:

A. Distance from the center of the dipole

B. Magnitude of charges in the dipole

C. Both distance and angle

D. Angle between the dipole moment and the field point

Correct Option: C

8. How does a Polaroid filter work to polarize light?

Options:

A. By amplifying the intensity of light waves passing through it.

B. By absorbing all colors of light except the desired color.

C. By reversing the direction of light waves passing through it.

D. By selectively transmitting light waves vibrating in a specific direction.

Correct Option: D

9. What are the SI units of magnetic flux?

Options:

- A. Tesla (T)
- B. Joules (J)
- C. Weber (Wb)
- D. Ampere (A)

Correct Option: C

10. When a wave travels through a medium, energy is transferred _____.

Options:

- A. at a constant speed
- B. from one place to another
- C. none of the above statements is applicable
- D. in a periodic manner

Correct Option: D

1. Heat is:

- A) Energy transferred by macroscopic work
- B) Energy transferred by virtue of a temperature difference
- C) A temperature difference
- D) Energy content of an object
- Correct Option: B) Energy transferred by virtue of a temperature difference

2. If I_0 is the peak value of an AC supply, then its rms value is given as I_{rms} :

- A) $I_0/0.707$
- B) $I_0/\sqrt{2}$
- C) $I_0/2\sqrt{2}$
- D) I_0
- Correct Option: B) $I_0/\sqrt{2}$

3. A particle carrying a charge of $2e$ falls through potential difference of $3V$. The energy acquired by it will be:

- A) 3 eV
- B) 0.66 eV
- C) 1.5 eV
- D) 6 eV
- Correct Option: D) 6 eV

4. If a conductor is placed between the plates of a capacitor, what will happen to the potential difference between the plates?

- A) It will decrease
- B) It will be maintained
- C) It will increase
- D) It will become zero
- Correct Option: B) It will be maintained

5. Lenz's law is in accordance with:

- A) Energy
- B) Charge
- C) Momentum
- D) Mass
- Correct Option: A) Energy

6. In a rainy day, small oil films on water show brilliant colors. This is due to the phenomenon of:

- A) Dispersion
- B) Interference
- C) Polarization
- D) Diffraction
- Correct Option: B) Interference

7. The resolving power of a telescope can be increased by:

- A) Decreasing the lens diameters
- B) Increasing the lens diameters
- C) Increasing the objective focal length and decreasing the eyepiece focal length
- D) Inserting a correction lens between the objective and eyepiece
- Correct Option: C) Increasing the objective focal length and decreasing the eyepiece focal length

8. Transformers are used in:

- A) Neither in DC nor in AC circuits
- B) DC circuit only
- C) AC circuits only
- D) Both DC and AC circuits
- Correct Option: C) AC circuits only

9. What does the coefficient " α " represent, in the context of material expansion?

- A) The change in volume per unit temperature.
- B) The initial length of the rod.
- C) The shape distortion of metals.
- D) The change in length per unit temperature.
- Correct Option: D) The change in length per unit temperature.

10. How does the electric potential V due to an electric dipole behave along its equatorial line at a distance " r "?

- A) $V = 0$
- B) V is constant
- C) $V \propto 1/r$
- D) $V \propto r$
- Correct Option: A) $V = 0$

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