

Quiz: Physics set 7

Q301: A particle starts from rest and moves with constant acceleration 3 m/s^2 . The distance covered in 4 s is:

- A) 12 m
- B) 24 m
- C) 48 m
- D) 6 m

Q302: A ball is thrown vertically downward with velocity 10 m/s. The velocity after 2 s ($g = 10 \text{ m/s}^2$) is:

- A) 20 m/s
- B) 30 m/s
- C) 10 m/s
- D) 40 m/s

Q303: A force of 20 N acts on a mass of 4 kg. The acceleration produced is:

- A) 2 m/s^2
- B) 4 m/s^2
- C) 5 m/s^2
- D) 10 m/s^2

Q304: The work done in stretching a spring by x is proportional to:

- A) x
- B) x^2
- C) $1/x$
- D) \sqrt{x}

Q305: For rolling without slipping, the condition is:

- A) $v = \omega R$
- B) $v = \omega/R$
- C) $v = R/\omega$
- D) $v = \omega^2 R$

Q306: The angular momentum of a body about a point is minimum when it moves:

- A) Towards the point
- B) Away from the point
- C) Perpendicular to radius
- D) In a circle

Q307: The value of g at the center of Earth is:

- A) Zero
- B) g
- C) $2g$
- D) $g/2$

Q308: The pressure at the bottom of a liquid column depends on:

- A) Density and height
- B) Area of container
- C) Shape of container
- D) Volume of liquid

Q309: The unit of bulk modulus is:

- A) N/m²
- B) N/m
- C) J
- D) kg

Q310: In an isothermal process, the internal energy of an ideal gas:

- A) Remains constant
- B) Increases
- C) Decreases
- D) Becomes zero

Q311: The ratio of specific heats for a monoatomic gas is:

- A) 5/3
- B) 7/5
- C) 4/3
- D) 3/2

Q312: The time period of SHM depends on:

- A) Mass and force constant
- B) Amplitude
- C) Energy
- D) Initial phase

Q313: The frequency of sound is determined by:

- A) Source
- B) Medium
- C) Amplitude
- D) Speed

Q314: The electric field just outside a charged conductor is:

- A) σ/ϵ_0
- B) σ
- C) $\sigma\epsilon_0$
- D) ϵ_0/σ

Q315: The SI unit of electric dipole moment is:

- A) C·m
- B) C/m
- C) N·m
- D) J/C

Q316: When a capacitor is fully charged in DC circuit, the current through it is:

- A) Zero
- B) Maximum
- C) Minimum
- D) Infinite

Q317: The drift velocity of electrons increases if:

- A) Electric field increases
- B) Length increases
- C) Area decreases
- D) Temperature decreases

Q318: The magnetic field at the center of a solenoid is independent of:

- A) Length
- B) Current
- C) Number of turns
- D) Permeability

Q319: The force between two long parallel conductors carrying currents in opposite directions is:

- A) Repulsive
- B) Attractive
- C) Zero
- D) Infinite

Q320: The energy stored in a magnetic field per unit volume is:

- A) $B^2/2\mu_0$
- B) $\mu_0 B^2$
- C) B/μ_0
- D) μ_0/B

Q321: In an AC circuit, the RMS value of voltage is:

- A) $V_0/\sqrt{2}$
- B) V_0
- C) $\sqrt{2}V_0$
- D) $V_0/2$

Q322: At resonance in LCR circuit, the phase difference between current and voltage is:

- A) 0
- B) 90 deg
- C) 180 deg
- D) 45 deg

Q323: The focal length of a convex lens is:

- A) Positive
- B) Negative
- C) Zero
- D) Infinite

Q324: A plane mirror forms an image which is:

- A) Virtual and erect
- B) Real and inverted
- C) Real and erect
- D) Virtual and inverted

Q325: The angular separation of fringes in diffraction increases if:

- A) Slit width decreases
- B) Wavelength decreases
- C) Screen distance decreases
- D) Intensity increases

Q326: The photoelectric effect supports the concept of:

- A) Photon
- B) Wave nature only
- C) Classical theory
- D) Sound waves

Q327: The de Broglie wavelength of an electron increases if its:

- A) Velocity decreases
- B) Mass increases
- C) Energy increases
- D) Charge increases

Q328: The radius of the nucleus is independent of:

- A) Atomic number
- B) Mass number
- C) Neutron number
- D) Nuclear force

Q329: Alpha particles are identical to:

- A) Helium nuclei
- B) Hydrogen nuclei
- C) Electrons
- D) Neutrons

Q330: The half-life of a radioactive substance is the time in which:

- A) Half the nuclei decay
- B) All nuclei decay
- C) Activity doubles
- D) Energy halves

Q331: In an intrinsic semiconductor, the Fermi level lies:

- A) Midway between bands
- B) Near conduction band
- C) Near valence band
- D) Outside bands

Q332: The transistor is primarily used as:

- A) Amplifier
- B) Rectifier
- C) Oscillator only
- D) Capacitor

Q333: The dimensional formula of potential difference is:

- A) $ML^2T^{-3}I^{-1}$
- B) MLT^{-2}
- C) ML^2T^{-2}
- D) MLT^{-1}

Q334: The orbital speed of a satellite decreases when:

- A) Orbit radius increases
- B) Mass increases
- C) Earth mass increases
- D) g increases

Q335: The coefficient of viscosity has unit:

- A) $\text{Pa}\cdot\text{s}$
- B) N/m
- C) kg/m^2
- D) m/s

Q336: The restoring force in SHM always acts towards:

- A) Mean position
- B) Extreme position
- C) Direction of motion
- D) Random direction

Q337: The loudness of sound depends on:

- A) Amplitude
- B) Frequency
- C) Wavelength
- D) Speed

Q338: The electric field due to an infinite plane sheet of charge is:

- A) $\sigma/2\epsilon_0$
- B) σ/ϵ_0
- C) Zero
- D) Depends on distance

Q339: The capacitance of a parallel plate capacitor is independent of:

- A) Charge on plates
- B) Plate area
- C) Plate separation
- D) Dielectric

Q340: The magnetic field at a point on the axis of a current loop is maximum at:

- A) Center
- B) Infinity
- C) Edge
- D) Any point

Q341: The back emf of a DC motor is maximum when:

- A) Speed is maximum
- B) Current is maximum
- C) Motor starts
- D) Load is maximum

Q342: In an AC circuit, the power factor is maximum when:

- A) $\phi = 0$
- B) $\phi = 90 \text{ deg}$
- C) $\phi = 45 \text{ deg}$
- D) $\phi = 180 \text{ deg}$

Q343: A concave lens always forms an image which is:

- A) Virtual and erect
- B) Real and inverted
- C) Real and erect
- D) Virtual and inverted

Q344: The refractive index of a medium decreases with increase in:

- A) Wavelength
- B) Density
- C) Frequency
- D) Optical density

Q345: The work function of a metal depends on:

- A) Nature of metal
- B) Intensity of light
- C) Frequency
- D) Time

Q346: The rest mass of neutrino is approximately:

- A) Zero
- B) Very large
- C) Equal to electron
- D) Infinite

Q347: The SI unit of absorbed dose of radiation is:

- A) Gray
- B) Sievert
- C) Becquerel
- D) Curie

Q348: The resistance of an intrinsic semiconductor at absolute zero is:

- A) Infinite
- B) Zero
- C) Finite
- D) Minimum

Q349: The logic gate used in a half adder is:

- A) XOR
- B) OR
- C) NOT
- D) NOR

Q350: The SI unit of magnetic flux is:

- A) Weber
- B) Tesla
- C) Henry
- D) Ampere

Q351: The center of mass of an isolated system remains at rest or moves with constant velocity because of conservation of:

- A) Momentum
- B) Energy
- C) Angular momentum
- D) Force