Quiz: Physics set 11

Q501: A particle moves with velocity v = 6t - 2 (m/s). The displacement covered in first 4 s is:

A) 40 m

B) 44 m

C) 48 m

D) 56 m

Q502: A ball is thrown vertically upward with speed 25 m/s. The maximum height reached (g = 10 m/s2) is:

A) 25 m

B) 30 m

C) 31.25 m

D) 40 m

Q503: Two blocks of masses 1 kg and 2 kg are connected by a string and pulled by a force of 9 N on a smooth surface. The acceleration of the system is:

A) 3 m/s2

B) 4.5 m/s2

C) 6 m/s2

D) 9 m/s2

Q504: The work done by a force F = 4x from x = 0 to x = 3 m is:

A) 12 J

B) 18 J

C) 24 J

D) 36 J

Q505: For a body rolling without slipping, the ratio of translational kinetic energy to total kinetic energy for a solid sphere is:

A) 5/7

B) 2/5

C) 3/7

D) 1/2

Q506: The orbital speed of a satellite at height h above Earth surface is proportional to:

A) 1/sqrt(R+h)

B) sqrt(R+h)

C) 1/(R+h)

D) (R+h)

Q507: The terminal velocity of a small sphere falling through a viscous liquid is proportional to:

A) r2

B) r

C) 1/r

D) 1/r2

Q508: The SI unit of Young's modulus is equivalent to:

A) N/m2
B) N/m
C) J
D) kg

Q509: In an adiabatic process for an ideal gas, the temperature:

A) Changes
B) Remains constant
C) Becomes zero
D) Becomes infinite

Q510: The total energy of a particle in SHM is proportional to:

A) Square of amplitude
B) Amplitude
C) Frequency
D) Time period

Q511: The speed of sound in a gas is maximum when the gas is:

A) Hot
B) Cold
C) Dense
D) At high pressure

Q512: The electric field due to an infinite plane sheet of charge is:

A) sigma/2epsilon0
B) sigma/epsilon0
C) Zero
D) Depends on distance

Q513: The electric potential at the center of a charged spherical shell of radius R is:

A) kQ/R
B) Zero
C) kQ/R2
D) Infinite

Q514: The capacitance of a parallel plate capacitor filled with dielectric of constant k is:

A) kepsilon0A/d
B) epsilon0A/d
C) epsilon0A/kd
D) A/kd

Q515: The drift velocity of electrons in a conductor depends on:

A) Electric field
B) Length of conductor
C) Area of cross section
D) Potential difference only

Q516: The magnetic field at the center of a circular coil of N turns carrying current I is:

A) mu0NI/2R
B) mu0I/2R
C) mu0NI/R
D) mu0I/R

Q517: The force per unit length between two parallel current-carrying conductors is proportional to:

A) Product of currents
B) Distance between them
C) Resistance
D) Area

Q518: The induced emf in a coil is zero when the magnetic flux through it is:

A) Constant
B) Maximum
C) Minimum
D) Zero

Q519: In an AC circuit, the average power consumed by a pure capacitor is:

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

Q520: The impedance of an LCR circuit at resonance is equal to:

A) R
B) XL
C) XC
D) Zero

Q521: The focal length of a convex mirror is:

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

Q522: A convex lens forms a real image when the object is placed:

A) Beyond focal length
B) Within focal length
C) At focus only
D) At infinity only

Q523: The angular width of central maximum in diffraction is inversely proportional to:

A) Slit width
B) Wavelength
C) Screen distance
D) Intensity

Q524: The stopping potential in photoelectric effect is independent of:

A) Intensity of light
B) Frequency
C) Work function
D) Nature of metal

Q525: The de Broglie wavelength of an electron accelerated through potential V is proportional to:

A) 1/sqrtV
B) sqrtV
C) V
D) 1/V

Q526: The radius of a nucleus is proportional to:

A) A^(1/3)
B) A
C) 1/A
D) A2

Q527: The binding energy of a nucleus is due to:

A) Strong nuclear force
B) Electrostatic force
C) Gravitational force
D) Weak force

Q528: The half-life of a radioactive substance depends on:

A) Decay constant
B) Initial mass
C) Temperature
D) Pressure

Q529: The conductivity of an intrinsic semiconductor increases with:

A) Temperature
B) Pressure
C) Length
D) Area

Q530: The depletion region of a p-n junction is free from:

A) Free charge carriers
B) Electric field
C) Ions
D) Potential difference

Q531: The current gain of a transistor in common emitter configuration is:

A) beta
B) alpha
C) gamma
D) delta

Q532: The dimensional formula of electric potential is:

A) ML2T^-3I^-1
B) MLT^-2
C) ML2T^-2
D) MLT^-1

Q533: The orbital velocity of a satellite decreases when:

A) Orbital radius increases
B) Mass of satellite increases
C) Earth mass increases
D) g increases

Q534: The coefficient of viscosity has unit:

A) Pa·s
B) N/m
C) kg/m2
D) m/s

Q535: The restoring force in SHM is always directed towards:

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

Q536: The loudness of sound depends on:

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

Q537: The electric field inside a hollow charged conductor is:

A) Zero
B) Constant
C) Maximum
D) Infinite

Q538: The magnetic field around a straight current-carrying conductor is given by:

A) Right hand thumb rule
B) Fleming's left hand rule
C) Lenz's law
D) Gauss's law

Q539: The energy stored per unit volume in an electric field is:

A) (1/2)epsilon0E2
B) epsilon0E
C) E2/epsilon0
D) epsilon0/E

Q540: In an AC circuit, current and voltage are in phase when the circuit is:

A) Purely resistive
B) Purely inductive
C) Purely capacitive
D) LCR at resonance

Q541: A concave mirror forms a virtual image when the object is placed:

A) Between pole and focus
B) Beyond focus
C) At center of curvature
D) At infinity

Q542: The refractive index of a medium decreases with increase in:

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

Q543: The work function of a metal is measured in:

A) eV
B) J
C) W
D) N

Q544: The energy of a photon is directly proportional to its:

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

Q545: The decay constant of a radioactive substance depends on:

A) Nature of nucleus
B) Temperature
C) Pressure
D) Chemical state

Q546: The Fermi level in an n-type semiconductor lies closer to:

A) Conduction band
B) Valence band
C) Middle of band gap
D) Outside bands

Q547: The logic gate whose output is 1 only when both inputs are 1 is:

A) AND
B) OR
C) XOR
D) NOT

Q548: The SI unit of capacitance is:

A) Farad
B) Henry
C) Ohm
D) Volt

Q549: The phenomenon responsible for blue colour of the sky is:

A) Scattering
B) Reflection
C) Refraction
D) Diffraction

Q550: Faraday's law of electromagnetic induction states that induced emf is proportional to:

A) Rate of change of magnetic flux
B) Magnetic field
C) Area of loop
D) Resistance