Quiz: Physics set 6

Q251: A particle moves with uniform acceleration. Its velocity changes from 10 m/s to 30 m/s in 5 s. The acceleration is:

A) 2 m/s2
B) 4 m/s2
C) 5 m/s2
D) 6 m/s2

Q252: A stone is thrown vertically upward with speed 20 m/s. The time taken to reach maximum height (g = 10 m/s2) is:

A) 1 s
B) 2 s
C) 3 s
D) 4 s

Q253: Two equal forces act on a body at right angles. If each force is 10 N, the magnitude of the resultant is:

A) 10 N
B) 14.14 N
C) 20 N
D) 5 N

Q254: A body of mass 2 kg moving with speed 4 m/s comes to rest after moving 8 m. The retarding force acting on it is:

A) 1 N
B) 2 N
C) 4 N
D) 8 N

Q255: The kinetic energy of a body is doubled. Its momentum becomes:

A) Double
B) sqrt2 times
C) Half
D) Four times

Q256: A solid sphere and a hollow sphere of same mass and radius roll down an incline. Which reaches the bottom first?

A) Solid sphere
B) Hollow sphere
C) Both together
D) Depends on radius

Q257: The angular momentum of a particle moving in a circular path is conserved if:

A) No external torque acts
B) Speed is constant
C) Radius is constant
D) Force is zero

Q258: The value of g inside Earth decreases linearly with:

A) Depth
B) Radius
C) Mass
D) Density

Q259: The excess pressure inside a liquid drop of radius r and surface tension T is:

A) 2T/r
B) 4T/r
C) T/r
D) 8T/r

Q260: The average translational kinetic energy of gas molecules depends only on:

A) Temperature
B) Pressure
C) Volume
D) Molar mass

Q261: The efficiency of a Carnot engine working between temperatures T1 and T2 is:

A) 1 - T2/T1
B) T2/T1
C) T1/T2
D) 1 - T1/T2

Q262: In SHM, the total energy is equal to:

A) Maximum potential energy
B) Maximum kinetic energy
C) Sum of both
D) Zero

Q263: The speed of sound in air at constant pressure increases with:

A) Temperature
B) Density
C) Pressure
D) Humidity only

Q264: The electric potential at the center of a uniformly charged spherical shell is:

A) kQ/R
B) Zero
C) Infinite
D) kQ/r2

Q265: If the charge on a capacitor is doubled, the energy stored becomes:

A) Four times
B) Double
C) Half
D) Same

Q266: The drift velocity of electrons in a conductor is typically of the order of:

A) 10^-4 m/s
B) 102 m/s
C) 106 m/s
D) 108 m/s

Q267: The magnetic force on a straight current carrying conductor in a uniform magnetic field is maximum when angle between them is:

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

Q268: The magnetic field at the center of a circular coil of N turns carrying current I and radius R is:

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

Q269: The induced emf in a coil is zero when the magnetic flux through it is:

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

Q270: In an AC circuit, the average power consumed by a pure inductor is:

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

Q271: At resonance in an LCR circuit, the current is:

A) Maximum
B) Minimum
C) Zero
D) Independent of frequency

Q272: The focal length of a concave mirror is:

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

Q273: The magnification of a plane mirror is:

A) +1
B) -1
C) 0
D) Depends on distance

Q274: The fringe width in Young’s double slit experiment is inversely proportional to:

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

Q275: The maximum kinetic energy of photoelectrons depends on:

A) Frequency of incident light
B) Intensity of light
C) Area of surface
D) Time of exposure

Q276: The de Broglie wavelength of a proton accelerated through potential V is proportional to:

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

Q277: The binding energy per nucleon is maximum for nuclei with mass number around:

A) 56
B) 4
C) 12
D) 235

Q278: The radioactive decay constant has the dimension of:

A) T^-1
B) T
C) T2
D) Dimensionless

Q279: The conductivity of an intrinsic semiconductor increases with:

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

Q280: The depletion layer in a p-n junction is free of:

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

Q281: The SI unit of magnetic moment is:

A) A·m2
B) Tesla
C) Weber
D) Henry

Q282: The escape speed from Earth is approximately:

A) 11.2 km/s
B) 7.9 km/s
C) 5 km/s
D) 20 km/s

Q283: The coefficient of friction between two surfaces depends on:

A) Nature of surfaces
B) Area of contact
C) Mass
D) Speed

Q284: The energy stored per unit volume in an electric field is:

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

Q285: The direction of induced emf is given by:

A) Lenz’s law
B) Faraday’s law
C) Ohm’s law
D) Ampere’s law

Q286: The unit of alternating current frequency is:

A) Hz
B) rad/s
C) A
D) V

Q287: The resolving power of a microscope is proportional to:

A) 1/lambda
B) lambda
C) f
D) 1/f

Q288: The work function of a metal is the minimum energy required to:

A) Remove an electron
B) Excite an atom
C) Ionize a nucleus
D) Create photons

Q289: The radius of the nth Bohr orbit of hydrogen atom is proportional to:

A) n2
B) n
C) 1/n
D) 1/n2

Q290: Gamma rays have the highest:

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

Q291: The activity of a radioactive substance is measured in:

A) Becquerel
B) Gray
C) Sievert
D) Curie per second

Q292: The resistance of a semiconductor decreases with increase in:

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

Q293: The logic gate that gives output 1 only when both inputs are 1 is:

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

Q294: The SI unit of electric field intensity is:

A) N/C
B) V
C) J/C
D) C/N

Q295: The center of mass of a system is stationary when:

A) Net external force is zero
B) Internal forces are zero
C) Energy is constant
D) Momentum is zero

Q296: The speed of light in vacuum is:

A) 3x108 m/s
B) 3x106 m/s
C) 1.5x108 m/s
D) Depends on wavelength

Q297: The phenomenon of total internal reflection occurs when light travels from:

A) Denser to rarer medium
B) Rarer to denser medium
C) Vacuum to air
D) Any medium

Q298: The half-life of a radioactive element is independent of:

A) Temperature
B) Initial amount
C) Pressure
D) Chemical state

Q299: The energy band gap of an insulator is of the order of:

A) Several eV
B) 1 eV
C) 0 eV
D) 0.01 eV

Q300: The SI unit of inductance is named after:

A) Henry
B) Faraday
C) Tesla
D) Ampere