Quiz: Physics set 15

Q703: A particle moves with velocity v = 4t + 2 (m/s). The displacement in first 3 s is:

A) 18 m
B) 24 m
C) 30 m
D) 36 m

Q704: A projectile is thrown with speed 20 m/s at an angle of 45 deg. The maximum height reached (g = 10 m/s2) is:

A) 5 m
B) 7.5 m
C) 10 m
D) 20 m

Q705: Two blocks of masses 2 kg and 3 kg are connected by a light string on a smooth surface. A force of 10 N pulls the system. The tension in the string is:

A) 4 N
B) 6 N
C) 8 N
D) 10 N

Q706: The work done by force F = 2x + 4 (N) from x = 0 to x = 4 m is:

A) 24 J
B) 32 J
C) 40 J
D) 48 J

Q707: For pure rolling of a solid cylinder, the ratio of rotational KE to translational KE is:

A) 1/2
B) 1
C) 2/3
D) 2

Q708: The orbital speed of a satellite close to Earth’s surface is proportional to:

A) sqrtR
B) 1/sqrtR
C) R
D) 1/R

Q709: The terminal velocity of a sphere in a viscous medium increases when:

A) Radius increases
B) Viscosity increases
C) Density of medium increases
D) Gravity decreases

Q710: The SI unit of surface tension is:

A) N/m
B) N/m2
C) J
D) kg/s2

Q711: In an adiabatic expansion of an ideal gas, the internal energy:

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

Q712: The acceleration of a particle in SHM at displacement x is given by:

A) -omega2x
B) omega2x
C) -omegax
D) omegax

Q713: The speed of sound in air increases with:

A) Temperature
B) Density
C) Pressure at constant T
D) Decrease in humidity

Q714: The electric field at a distance r from an infinite line charge is proportional to:

A) 1/r
B) 1/r2
C) r
D) r2

Q715: The potential difference between plates of a capacitor is doubled. The capacitance becomes:

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

Q716: The drift velocity of electrons in a conductor is directly proportional to:

A) Electric field
B) Length
C) Area
D) Resistance

Q717: The magnetic field at the center of a circular loop of radius R carrying current I is:

A) mu0I/2R
B) mu0I/R
C) mu0R/I
D) mu0/IR

Q718: The force between two parallel current carrying conductors separated by distance d varies as:

A) 1/d
B) 1/d2
C) d
D) d2

Q719: The induced emf in a coil depends on:

A) Rate of change of magnetic flux
B) Flux only
C) Resistance only
D) Area only

Q720: In a purely capacitive AC circuit, the current:

A) Leads voltage by 90 deg
B) Lags voltage by 90 deg
C) Is in phase
D) Is zero

Q721: At resonance in an LCR circuit, the power factor is:

A) 1
B) 0
C) 0.5
D) Depends on L

Q722: The focal length of a concave mirror is equal to:

A) R/2
B) R
C) 2R
D) R/4

Q723: A convex lens has focal length 20 cm. The object distance for image at infinity is:

A) 20 cm
B) 40 cm
C) 10 cm
D) Infinity

Q724: The fringe width in Young's double slit experiment is proportional to:

A) Wavelength
B) Slit separation
C) 1/Screen distance
D) Intensity

Q725: The stopping potential in photoelectric effect depends on:

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

Q726: The de Broglie wavelength of a particle is inversely proportional to its:

A) Momentum
B) Energy
C) Velocity
D) Mass

Q727: The binding energy per nucleon is maximum for nuclei of mass number around:

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

Q728: The SI unit of radioactive decay constant is:

A) s^-1
B) Bq
C) J
D) C

Q729: The conductivity of a semiconductor increases when:

A) Temperature increases
B) Temperature decreases
C) Pressure increases
D) Volume increases

Q730: In a p-n junction diode under forward bias, the depletion layer:

A) Narrows
B) Widens
C) Disappears completely
D) Remains unchanged

Q731: The current gain in common base transistor configuration is:

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

Q732: The dimensional formula of magnetic field B is:

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

Q733: The escape speed from Earth is approximately:

A) 11.2 km/s
B) 7.9 km/s
C) 5 km/s
D) 15 km/s

Q734: The SI unit of torque is:

A) N·m
B) J
C) W
D) kg·m2

Q735: The coefficient of viscosity of a liquid decreases with:

A) Increase in temperature
B) Increase in pressure
C) Increase in density
D) Decrease in volume

Q736: The pitch of a sound depends on:

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

Q737: The electric field just outside a charged conductor is:

A) sigma/epsilon0
B) sigma/2epsilon0
C) epsilon0sigma
D) Zero

Q738: The direction of induced current is given by:

A) Lenz’s law
B) Right hand thumb rule
C) Fleming’s left hand rule
D) Ampere’s law

Q739: The energy stored per unit volume in an electric field is:

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

Q740: The average power in an AC circuit is given by:

A) VIcosphi
B) VI
C) VIsinphi
D) I2R only

Q741: A convex mirror always produces an image that is:

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

Q742: The refractive index of a medium increases when the speed of light in it:

A) Decreases
B) Increases
C) Remains same
D) Becomes zero

Q743: The work function of a metal depends on:

A) Nature of metal
B) Intensity of light
C) Frequency of light
D) Area of surface

Q744: The energy of a photon of frequency nu is:

A) hnu
B) hc
C) h/nu
D) h/lambda2

Q745: The decay constant of a radioactive substance depends on:

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

Q746: The Fermi level in a p-type semiconductor lies closer to:

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

Q747: The logic gate that gives output 0 only when all inputs are 1 is:

A) NAND
B) AND
C) NOR
D) XOR

Q748: The SI unit of magnetic flux is:

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

Q749: The phenomenon responsible for blue colour of sky is:

A) Rayleigh scattering
B) Refraction
C) Reflection
D) Diffraction

Q750: The SI unit of electric current density is:

A) A/m2
B) A/m
C) C/m2
D) V/m

Q751: Magnetic susceptibility of a paramagnetic substance is:

A) Small positive
B) Negative
C) Zero
D) Infinite

Q752: 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 coil
D) Resistance