Quiz: Physics set 16

Q753: A particle moves with acceleration a = 8t (m/s2). If it starts from rest, the velocity at t = 2 s is:

A) 8 m/s
B) 12 m/s
C) 16 m/s
D) 32 m/s

Q754: A projectile is fired with speed 30 m/s at 60 deg. The horizontal range (g = 10 m/s2) is:

A) 45 m
B) 60 m
C) 78 m
D) 90 m

Q755: Two blocks of masses 3 kg and 5 kg are in contact on a smooth surface. A force of 16 N is applied on 3 kg block. The acceleration of the system is:

A) 2 m/s2
B) 3 m/s2
C) 4 m/s2
D) 5 m/s2

Q756: The work done by force F = 10 - 2x (N) from x = 0 to x = 3 m is:

A) 21 J
B) 24 J
C) 27 J
D) 30 J

Q757: For pure rolling of a hollow sphere, the ratio of rotational KE to translational KE is:

A) 2/3
B) 3/5
C) 1
D) 5/3

Q758: The orbital period of a satellite increases when:

A) Orbital radius increases
B) Satellite mass increases
C) Earth mass increases
D) g increases

Q759: The terminal velocity of a body falling in a viscous medium decreases when:

A) Viscosity increases
B) Radius increases
C) Density of body increases
D) Gravity increases

Q760: The dimensional formula of pressure is:

A) ML^-1T^-2
B) MLT^-2
C) M0LT^-2
D) ML2T^-2

Q761: In an isochoric process, the work done by the gas is:

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

Q762: The restoring force in SHM is directly proportional to:

A) Displacement
B) Velocity
C) Acceleration
D) Time

Q763: The speed of sound in air is maximum when air is:

A) Hot and humid
B) Cold and dry
C) Cold and humid
D) Hot and dry

Q764: The electric field at the center of a uniformly charged solid sphere is:

A) Zero
B) Maximum
C) Infinite
D) Depends on radius

Q765: The SI unit of electric flux is:

A) N·m2/C
B) C/m2
C) V/m
D) J/C

Q766: If a dielectric slab completely fills a capacitor, its capacitance becomes:

A) k times
B) 1/k times
C) Unchanged
D) Zero

Q767: The drift velocity of charge carriers is inversely proportional to:

A) Number density
B) Electric field
C) Mobility
D) Charge

Q768: The magnetic field inside a toroid is:

A) Confined within core
B) Zero everywhere
C) Uniform outside
D) Maximum outside

Q769: The SI unit of magnetic flux density is:

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

Q770: The induced emf in a conductor is zero if the magnetic flux is:

A) Constant
B) Increasing
C) Decreasing
D) Alternating

Q771: In a purely inductive AC circuit, the current:

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

Q772: At resonance in an LCR circuit, the current is:

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

Q773: The focal length of a convex mirror is:

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

Q774: A concave mirror produces a real image when the object is placed:

A) Beyond focal length
B) Between pole and focus
C) At pole
D) At infinity only

Q775: The fringe width in Young’s double slit experiment increases when:

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

Q776: The photoelectric effect supports the particle nature of:

A) Light
B) Electron
C) Photon mass
D) Energy

Q777: The de Broglie wavelength of a particle is maximum when its momentum is:

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

Q778: The binding energy per nucleon is minimum for:

A) Hydrogen
B) Iron
C) Helium
D) Carbon

Q779: The SI unit of absorbed dose of radiation is:

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

Q780: The conductivity of an intrinsic semiconductor is zero at:

A) 0 K
B) Room temperature
C) High temperature
D) Any temperature

Q781: In an n-type semiconductor, the Fermi level lies closer to:

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

Q782: The SI unit of electric potential is:

A) Volt
B) Joule
C) Coulomb
D) Ampere

Q783: The escape speed from Earth does not depend on:

A) Mass of the body
B) Mass of Earth
C) Radius of Earth
D) Gravitational constant

Q784: The SI unit of angular momentum is:

A) kg·m2/s
B) kg·m/s
C) N·m
D) J

Q785: The coefficient of viscosity of gases increases with:

A) Temperature
B) Pressure
C) Density
D) Volume

Q786: The pitch of sound depends on:

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

Q787: The electric field inside a conductor in electrostatic equilibrium is:

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

Q788: The direction of magnetic field around a straight conductor is given by:

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

Q789: The energy stored per unit volume in a magnetic field is:

A) B2/2mu0
B) mu0B2
C) B/mu0
D) mu0/B

Q790: The power factor of an AC circuit is:

A) cosphi
B) sinphi
C) tanphi
D) 1/phi

Q791: A convex mirror always forms an image which is:

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

Q792: The refractive index of a medium decreases when the wavelength of light:

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

Q793: The work function of a metal is independent of:

A) Intensity of incident light
B) Nature of metal
C) Surface condition
D) Temperature

Q794: The energy of a photon is:

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

Q795: The decay constant of a radioactive element is:

A) Independent of external conditions
B) Dependent on temperature
C) Dependent on pressure
D) Dependent on chemical state

Q796: The Fermi level in an intrinsic semiconductor lies:

A) At mid-gap
B) Near conduction band
C) Near valence band
D) Outside bands

Q797: The logic gate whose output is 1 only when inputs are different is:

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

Q798: The SI unit of capacitance is:

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

Q799: The phenomenon responsible for mirage is:

A) Total internal reflection
B) Refraction only
C) Diffraction
D) Scattering

Q800: The SI unit of current density is:

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

Q801: Magnetic susceptibility of a diamagnetic substance is:

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

Q802: 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