Quiz: Physics set 12

Q551: A particle moves with acceleration a = 6 - 2t (m/s2). If its velocity at t = 0 is 4 m/s, the velocity at t = 2 s is:

A) 8 m/s
B) 10 m/s
C) 12 m/s
D) 14 m/s

Q552: A projectile is launched with speed 25 m/s at 37 deg. The maximum height reached (g = 10 m/s2, sin37 deg = 0.6) is:

A) 9 m
B) 11.25 m
C) 15 m
D) 18.75 m

Q553: A 2 kg block moving at 6 m/s collides elastically with a stationary 4 kg block. The speed of the 2 kg block after collision is:

A) -2 m/s
B) -4 m/s
C) 0 m/s
D) 2 m/s

Q554: The work done by force F = 5x (N) from x = 0 to x = 4 m is:

A) 20 J
B) 30 J
C) 40 J
D) 50 J

Q555: For pure rolling of a ring, the ratio of rotational KE to translational KE is:

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

Q556: The total mechanical energy of a satellite in circular orbit of radius r is:

A) -GMm/2r
B) -GMm/r
C) GMm/2r
D) Zero

Q557: Terminal velocity of a sphere in a viscous liquid is inversely proportional to:

A) Viscosity
B) Radius
C) Density difference
D) Gravity

Q558: The dimensional formula of Young’s modulus is:

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

Q559: In an isobaric process for an ideal gas, the work done is:

A) P(V2-V1)
B) nRT ln(V2/V1)
C) Zero
D) nCvDeltaT

Q560: The phase difference between displacement and acceleration in SHM is:

A) pi
B) pi/2
C) 0
D) 2pi

Q561: The speed of sound in a gas is proportional to:

A) sqrt(gammaT)
B) T
C) 1/sqrtT
D) Pressure

Q562: The electric field due to a point charge varies with distance r as:

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

Q563: Capacitance of a parallel plate capacitor is independent of:

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

Q564: Drift velocity of electrons in a conductor is proportional to:

A) Electric field
B) Potential only
C) Length
D) Area

Q565: The magnetic field at the center of a circular coil with N turns is proportional to:

A) NI
B) I/R
C) N/R
D) R

Q566: The SI unit of magnetic flux density is:

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

Q567: The induced emf in a coil is zero when:

A) Flux is constant
B) Flux is maximum
C) Area is large
D) Resistance is high

Q568: In an AC circuit, the average power consumed by a pure inductor is:

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

Q569: At resonance in an LCR circuit, the current is:

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

Q570: The focal length of a concave mirror (by sign convention) is:

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

Q571: A convex lens forms a virtual image when the object is placed:

A) Within focal length
B) Beyond focal length
C) At infinity
D) At 2F

Q572: In Young's double slit experiment, fringe width is proportional to:

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

Q573: The stopping potential in photoelectric effect measures:

A) Maximum kinetic energy
B) Intensity
C) Work function only
D) Frequency

Q574: The de Broglie wavelength of an electron accelerated through potential V is:

A) h/sqrt(2meV)
B) h/eV
C) sqrt(2meV)/h
D) h/2meV

Q575: The binding energy per nucleon is highest for:

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

Q576: The SI unit of activity of a radioactive sample is:

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

Q577: The conductivity of a semiconductor increases with increase in:

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

Q578: In a p-n junction diode, the depletion layer is formed due to:

A) Diffusion of carriers
B) Drift only
C) External field
D) Heating

Q579: The current gain in common emitter configuration is:

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

Q580: The dimensional formula of electric field is:

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

Q581: The escape speed from Earth is independent of:

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

Q582: 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

Q583: The electric potential inside a conducting sphere is:

A) Constant
B) Zero
C) Maximum at center
D) Minimum at surface

Q584: The magnetic field inside a long solenoid is:

A) Uniform
B) Zero
C) Non-uniform
D) Infinite

Q585: The power factor of an AC circuit is:

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

Q586: 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

Q587: The refractive index of a medium is inversely proportional to:

A) Speed of light in medium
B) Wavelength
C) Frequency
D) Amplitude

Q588: The work function of a metal is expressed in:

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

Q589: The energy of a photon is given by:

A) hnu
B) hc
C) h/lambda
D) Both A and C

Q590: The decay constant of a radioactive substance depends on:

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

Q591: The Fermi level in an intrinsic semiconductor lies:

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

Q592: The logic gate that outputs 1 when inputs are different is:

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

Q593: The SI unit of inductance is:

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

Q594: The phenomenon responsible for mirage is:

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

Q595: The SI unit of current density is:

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

Q596: Magnetic susceptibility of a diamagnetic substance is:

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

Q597: Faraday’s law states that induced emf is proportional to:

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

Q598: The SI unit of magnetic moment is:

A) A·m2
B) T·m
C) Wb
D) N·m

Q599: The center of mass of an isolated system moves with constant velocity due to conservation of:

A) Linear momentum
B) Energy
C) Angular momentum
D) Force

Q600: The SI unit of electric power is:

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

Q601: The blue colour of the sky is due to:

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