Quiz: Physics set 3

Q101: A particle moves with position given by x = 4t3 - 2t2 + 6 (m). The velocity at t = 2 s is:

A) 40 m/s
B) 44 m/s
C) 48 m/s
D) 52 m/s

Q102: A body of mass 1 kg moving with velocity 10 m/s collides elastically with a stationary body of mass 3 kg. The final velocity of the 1 kg body is:

A) -5 m/s
B) 0 m/s
C) 5 m/s
D) -10 m/s

Q103: A force F = 5x acts on a particle. The work done in moving it from x = 0 to x = 2 m is:

A) 5 J
B) 10 J
C) 20 J
D) 25 J

Q104: A disc of radius R rolls without slipping. The ratio of translational KE to rotational KE is:

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

Q105: The escape velocity from a planet of mass M and radius R is:

A) sqrt(2GM/R)
B) sqrt(GM/R)
C) GM/R
D) 2GM/R

Q106: If the density of water becomes double, the pressure at a given depth will:

A) Double
B) Become half
C) Remain same
D) Become four times

Q107: The average kinetic energy of gas molecules is proportional to:

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

Q108: For an adiabatic process, the correct relation is:

A) PV^gamma = constant
B) PV = constant
C) T/V = constant
D) P/T = constant

Q109: The total energy of a particle executing SHM is proportional to:

A) Amplitude2
B) Amplitude
C) Frequency
D) Time period

Q110: In a standing wave, the distance between two consecutive nodes is:

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

Q111: The electric field inside a conductor in electrostatic equilibrium is:

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

Q112: If the distance between plates of a capacitor is halved, capacitance becomes:

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

Q113: Drift velocity of electrons in a conductor is of the order of:

A) 10^-4 m/s
B) 104 m/s
C) 108 m/s
D) 1 m/s

Q114: The magnetic field at the center of a circular loop is maximum when:

A) Radius is minimum
B) Radius is maximum
C) Current is zero
D) Turns are zero

Q115: The direction of induced current is given by:

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

Q116: The power factor of an LCR circuit at resonance is:

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

Q117: A convex lens has focal length 20 cm. Its power is:

A) 5 D
B) -5 D
C) 10 D
D) -10 D

Q118: Total internal reflection occurs when light travels from:

A) Denser to rarer medium
B) Rarer to denser medium
C) Vacuum to air
D) Air to glass always

Q119: The angular width of central maximum in diffraction is proportional to:

A) lambda/a
B) a/lambda
C) lambdaD
D) D/lambda

Q120: The threshold frequency depends on:

A) Nature of metal
B) Intensity
C) Distance
D) Time

Q121: The kinetic energy of photoelectrons depends on:

A) Frequency
B) Intensity
C) Area
D) Distance

Q122: The number of neutrons in an atom is equal to:

A) Mass number - atomic number
B) Atomic number
C) Mass number
D) Protons

Q123: In beta decay, the particle emitted is:

A) Electron
B) Proton
C) Neutron
D) Alpha particle

Q124: The energy band gap of a conductor is:

A) Zero
B) Large
C) Small
D) Infinite

Q125: In p-type semiconductor, majority carriers are:

A) Holes
B) Electrons
C) Neutrons
D) Ions

Q126: The base of a transistor is lightly doped to:

A) Reduce recombination
B) Increase current
C) Increase voltage
D) Reduce resistance

Q127: The SI unit of angular momentum is:

A) kg·m2/s
B) kg·m/s
C) N·m
D) J·s

Q128: If the radius of orbit of a satellite is doubled, its orbital speed becomes:

A) 1/sqrt2 times
B) 2 times
C) sqrt2 times
D) 1/2 times

Q129: The coefficient of friction depends on:

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

Q130: The SI unit of surface tension is:

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

Q131: In SHM, acceleration is proportional to:

A) Displacement
B) Velocity
C) Square of displacement
D) Time

Q132: The speed of sound in air increases with:

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

Q133: Electric potential energy of two charges q1 and q2 separated by r is:

A) kq1q2/r
B) kq1q2/r2
C) kq1q2r
D) q1q2/r

Q134: The time constant of an RC circuit is:

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

Q135: The magnetic moment of a current loop is:

A) IA
B) I/A
C) A/I
D) I2A

Q136: In an AC circuit, average power is zero when phase angle is:

A) 90 deg
B) 0 deg
C) 45 deg
D) 30 deg

Q137: The unit of focal length is:

A) Meter
B) Diopter
C) Second
D) Radian

Q138: The resolving power of a microscope increases when:

A) Wavelength decreases
B) Wavelength increases
C) Aperture decreases
D) Magnification decreases

Q139: The rest mass of photon is:

A) Zero
B) Finite
C) Depends on frequency
D) Large

Q140: The nuclear force is:

A) Short range
B) Long range
C) Repulsive only
D) Electromagnetic

Q141: Zener diode is used as:

A) Voltage regulator
B) Rectifier
C) Amplifier
D) Switch

Q142: The SI unit of resistivity is:

A) Ohm·m
B) Ohm
C) m/Ohm
D) Ohm/m

Q143: If no external torque acts on a system, then:

A) Angular momentum is conserved
B) Linear momentum is zero
C) Energy is zero
D) Force is zero

Q144: The unit of Young's modulus is same as:

A) Pressure
B) Force
C) Energy
D) Power

Q145: The speed of light in glass is less than in vacuum due to:

A) Refractive index
B) Absorption
C) Reflection
D) Scattering

Q146: If the frequency of AC source is doubled, inductive reactance becomes:

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

Q147: The phenomenon used in optical fiber communication is:

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

Q148: The stopping potential in photoelectric effect is a measure of:

A) Maximum kinetic energy
B) Intensity
C) Work function
D) Charge

Q149: The SI unit of activity of a radioactive substance is:

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

Q150: The output of an XOR gate is 1 when:

A) Inputs are different
B) Inputs are same
C) Both 1
D) Both 0