Quiz: Physics set 1

Q1: A particle moves along a straight line with velocity \(v = 3t2 - 6t + 4\) (m/s). The acceleration at \(t = 2\,s\) is:

A) 6 m/s2
B) 12 m/s2
C) 0 m/s2
D) 18 m/s2

Q2: A body is projected vertically upward with speed 20 m/s. The maximum height reached (\(g=10\,m/s2\)) is:

A) 10 m
B) 20 m
C) 30 m
D) 40 m

Q3: A block of mass 2 kg is acted upon by a force \(F=10\,N\). The acceleration produced is:

A) 2 m/s2
B) 5 m/s2
C) 10 m/s2
D) 20 m/s2

Q4: Work done by a constant force of 5 N moving a body by 4 m at 60 deg to force is:

A) 10 J
B) 20 J
C) 40 J
D) 0 J

Q5: The kinetic energy of a 1 kg body moving with speed 10 m/s is:

A) 25 J
B) 50 J
C) 75 J
D) 100 J

Q6: Moment of inertia of a solid sphere of mass M and radius R about its diameter is:

A) \(\frac{2}{5}MR2\)
B) \(\frac{3}{5}MR2\)
C) \(\frac{1}{2}MR2\)
D) \(MR2\)

Q7: Angular momentum of a particle of mass m moving with velocity v at radius r is:

A) mvr
B) mv/r
C) mr/v
D) mrv2

Q8: Escape velocity from Earth is proportional to:

A) \(\sqrt{gR}\)
B) \(gR\)
C) \(\sqrt{g/R}\)
D) \(g/R\)

Q9: The pressure at depth h in a liquid of density \(\rho\) is:

A) \(\rho gh\)
B) \(\rho g/h\)
C) \(gh/\rho\)
D) \(g/\rho h\)

Q10: SI unit of coefficient of viscosity is:

A) Pa·s
B) N/m
C) kg/m
D) Pa

Q11: For an isothermal process of ideal gas, which remains constant?

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

Q12: Work done in isothermal expansion of ideal gas is given by:

A) \(nRT\ln(V2/V1)\)
B) \(PDelta V\)
C) 0
D) \(nC_vDelta T\)

Q13: Time period of simple pendulum of length l is:

A) \(2\pi\sqrt{l/g}\)
B) \(\sqrt{l/g}\)
C) \(2\pi g/l\)
D) \(\sqrt{g/l}\)

Q14: Frequency of SHM is independent of:

A) Amplitude
B) Mass
C) Force constant
D) Length

Q15: Wave speed on a stretched string depends on:

A) Tension and linear density
B) Amplitude
C) Frequency only
D) Wavelength only

Q16: Electric field due to point charge q at distance r is:

A) \(kq/r2\)
B) \(kq/r\)
C) \(qr2\)
D) \(q/r3\)

Q17: Unit of electric flux is:

A) N·m2/C
B) N/C
C) C/N
D) V/m

Q18: Capacitance of parallel plate capacitor increases if:

A) Plate separation decreases
B) Area decreases
C) Dielectric removed
D) Charge increases

Q19: Equivalent resistance of two 2Ohm resistors in parallel is:

A) 1 Ohm
B) 2 Ohm
C) 4 Ohm
D) 0.5 Ohm

Q20: Drift velocity of electrons increases with:

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

Q21: Magnetic force on a charge q moving with velocity v in magnetic field B is:

A) \(qvB\sin\theta\)
B) \(qvB\cos\theta\)
C) \(qv/B\)
D) \(qB/v\)

Q22: Radius of circular path of charged particle in magnetic field is:

A) \(mv/qB\)
B) \(qB/mv\)
C) \(mv2/qB\)
D) \(qv/mB\)

Q23: Induced emf in a coil depends on:

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

Q24: Reactance of capacitor in AC circuit is:

A) \(1/\omega C\)
B) \(\omega C\)
C) \(R\)
D) \(\omega L\)

Q25: Power factor of pure inductor is:

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

Q26: Focal length of convex mirror is:

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

Q27: Magnification produced by plane mirror is:

A) +1
B) -1
C) 0
D) 2

Q28: Fringe width in Young's double slit experiment depends on:

A) Wavelength
B) Slit separation
C) Screen distance
D) All of these

Q29: Photoelectric effect confirms the particle nature of:

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

Q30: De Broglie wavelength of particle is:

A) \(h/p\)
B) \(p/h\)
C) \(hp\)
D) \(h/mv2\)

Q31: Half-life of radioactive substance depends on:

A) Decay constant
B) Mass
C) Temperature
D) Pressure

Q32: Energy released in nuclear fission comes from:

A) Mass defect
B) Charge
C) Neutrons
D) Binding energy decrease

Q33: Semiconductor conductivity increases with:

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

Q34: Majority charge carriers in n-type semiconductor are:

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

Q35: Logic gate whose output is 1 only when both inputs are 1 is:

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

Q36: Dimensional formula of force is:

A) $MLT-2$
B) $ML2T-2$
C) $MT-1$
D) $LT-2$

Q37: Unit of magnetic flux is:

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

Q38: Torque is defined as:

A) $\vec{r}\times\vec{F}$
B) $\vec{F}/r$
C) $\vec{F}\cdot\vec{r}$
D) Fr

Q39: If wavelength of light increases, frequency:

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

Q40: Efficiency of Carnot engine depends on:

A) Temperatures of reservoirs
B) Working substance
C) Pressure
D) Volume

Q41: Angular velocity is measured in:

A) rad/s
B) m/s
C) N·m
D) Hz

Q42: Magnetic field at center of circular coil is proportional to:

A) Current
B) Radius
C) Resistance
D) Voltage

Q43: Energy stored in capacitor is:

A) \(\frac{1}{2}CV2\)
B) \(CV\)
C) \(C/V\)
D) \(V2/C\)

Q44: Resistance of conductor increases with:

A) Temperature
B) Area
C) Decreasing length
D) Cooling

Q45: Unit of electric current is:

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

Q46: Speed of electromagnetic waves in vacuum is:

A) \(3\times108\,m/s\)
B) Depends on frequency
C) Zero
D) Infinite

Q47: Lenz's law is a consequence of conservation of:

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

Q48: SI unit of power is:

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

Q49: Momentum of a body of mass m moving with velocity v is:

A) mv
B) mv2
C) m/v
D) v/m

Q50: If force acting on a body is zero, its velocity:

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