# Quiz: Physics set 14

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**Q653: 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

**Q654: 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

**Q655: 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

**Q656: 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

**Q657: 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

**Q658: The orbital speed of a satellite close to Earth’s surface is proportional to:**

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

**Q659: 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

**Q660: The SI unit of surface tension is:**

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

**Q661: In an adiabatic expansion of an ideal gas, the internal energy:**

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

**Q662: The acceleration of a particle in SHM at displacement x is given by:**

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

**Q663: The speed of sound in air increases with:**

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

**Q664: 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

**Q665: The potential difference between plates of a capacitor is doubled. The capacitance becomes:**

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

**Q666: The drift velocity of electrons in a conductor is directly proportional to:**

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

**Q667: 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

**Q668: The force between two parallel current carrying conductors separated by distance d varies as:**

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

**Q669: The induced emf in a coil depends on:**

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

**Q670: 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

**Q671: At resonance in an LCR circuit, the power factor is:**

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

**Q672: The focal length of a concave mirror is equal to:**

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

**Q673: 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

**Q674: The fringe width in Young’s double slit experiment is proportional to:**

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

**Q675: The stopping potential in photoelectric effect depends on:**

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

**Q676: The de Broglie wavelength of a particle is inversely proportional to its:**

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

**Q677: The binding energy per nucleon is maximum for nuclei of mass number around:**

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

**Q678: The SI unit of radioactive decay constant is:**

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

**Q679: The conductivity of a semiconductor increases when:**

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

**Q680: In a p-n junction diode under forward bias, the depletion layer:**

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

**Q681: The current gain in common base transistor configuration is:**

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

**Q682: The dimensional formula of magnetic field B is:**

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

**Q683: 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

**Q684: The SI unit of torque is:**

A) N·m
B) J
C) W
D) kg·m2

**Q685: 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

**Q686: The pitch of a sound depends on:**

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

**Q687: The electric field just outside a charged conductor is:**

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

**Q688: 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

**Q689: The energy stored per unit volume in an electric field is:**

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

**Q690: The average power in an AC circuit is given by:**

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

**Q691: 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

**Q692: The refractive index of a medium increases when the speed of light in it:**

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

**Q693: The work function of a metal depends on:**

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

**Q694: The energy of a photon of frequency nu is:**

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

**Q695: The decay constant of a radioactive substance depends on:**

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

**Q696: The Fermi level in a p-type semiconductor lies closer to:**

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

**Q697: The logic gate that gives output 0 only when all inputs are 1 is:**

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

**Q698: The SI unit of magnetic flux is:**

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

**Q699: The phenomenon responsible for blue colour of sky is:**

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

**Q700: The SI unit of electric current density is:**

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

**Q701: Magnetic susceptibility of a paramagnetic substance is:**

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

**Q702: 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