When a body receives radiation in the wavelength range 0.1 μm to 100 μm then its temperature.

A. Increases

B. Decreases

C. Does not change

D. Unpredictable

ANSWER: A

The Stefan-Boltzmann constant has the units of .

A. W/m.K4

B. W/m2.K4

C. J/m2.K4

D. W/m2.K2

ANSWER: B

The sun emits maximum radiation of 0.52 μm. Assuming the sun to be a black body then the surface temperature of the sun is.

A. 2345K

B. 5573K

C. 9847K

D. 6492K

ANSWER: B

The energy emitted by a black surface should not vary in accordance with.

A. Wavelength

B. Temperature

C. Surface characteristics

D. Time

ANSWER: D

Likewise the amount of emitted radiation is strongly influenced by the wavelength even if the temperature of the body is.

A. Increasing

B. Decreasing

C. Constant

D. It is not related with temperature

ANSWER: C

The full range of frequencies of electromagnetic radiation is called.

A. Visible light

B. Radio wave

C. Invisible light

D. Electromagnetic spectrum

ANSWER: D

Infrared rays have a shorter wavelength than.

A. X-rays

B. Ultraviolet rays

C. Radio waves

D. Gamma waves

ANSWER: C

A photon has energy of 1.10 x 10-13 J. The frequency of the photon is.

A. 1.66 x 1020 Hz

B. 1.66 x 10-12 m

C. 1.66 x 10-20 Hz

D. 1.66 x 10-20 m

ANSWER: A

Increase in temperature of a body is proportional to.

A. Amount of heat absorbed

B. Amount of heat evolved

C. Density of substance

D. Average K.E

ANSWER: A

How does the intensity of light affect the photo-electric current.

A. As the intensity increases, the photo-electric current decreases

B. As the intensity increases, the photo-electric current increases

C. As the intensity decreases, the photo-electric current decreases

D. NO effect

ANSWER: B

The work function of lithium is 2.5 eV. The maximum wavelength of light that can cause the Photo-electric effect in lithium is.

A. 3980Å

B. 4980 Å

C. 5980 Å

D. 6980 Å

ANSWER: B

The K.E of a photo-electron, emitted on shining a light of wavelength 6.2 x 10-6 m on a metal surface of work function 0.1 eV, is.

A. 0.01 eV

B. 0.02 eV

C. 0.1 eV

D. 1.0 eV

ANSWER: C

Photoelectrons stopping potential depends on.

A. Frequency of incident light and nature of cathode material

B. The intensity of incident light

C. The frequency of incident light

D. Nature of cathode material

ANSWER: A

The stopping potential value is 0.6 V when the light source is kept at a distance of 20 cm. When the same source is kept at 40 cm away, the stopping potential is.

A. 0.6 V

B. 0.3 V

C. 1.2 V

D. 2.4 V

ANSWER: A

The expression for the Compton shift is.

A.

B.

C.

D.

ANSWER: B

X-rays of wavelength 0.15 nm are scattered from a block of carbon. The wavelength of x-rays scattered at 0° is.

A. 0.15 nm

B. 0.154 nm

C. 0.165 nm

D. 0.178 nm

ANSWER: A

In Compton scattering, if the incident photon has a wavelength of 0.2 nm and φ = 90°, the angle at which recoil electron appears is.

A. 30.12°

B. 38.46°

C. 44.57°

D. 53.12°

ANSWER: C

When white light is passed through cool gases, the spectra observed is.

A. Line spectra

B. Continuous spectra

C. Emission line spectra

D. Absorption line spectra

ANSWER: D

X-rays of wavelength 100 pm are scattered from a carbon target at φ = 90°. The kinetic energy of the recoiling electron is.

A. 12.4 KeV

B. 12.4 J

C. 295 eV

D. 295 J

ANSWER: C

The de-Broglie wavelength, of an electron accelerated to a potential of 400 V, is.

A. 0.03 nm

B. 0.04 nm

C. 0.12 nm

D. 0.06 nm

ANSWER: D

The de-Broglie wavelength, of an electron whose kinetic energy is 120 eV, is.

A. 1.1 nm

B. 1.1 Å

C. 1.1 pm

D. 1.1 μm

ANSWER: B

In Davsson- Germer experiment, if the angle of diffraction is 52°, then the glancing angle will be.

A. 32°

B. 64°

C. 72°

D. 92°

ANSWER: B

An electron has a de-Broglie wavelength of 0.0013 nm. Its kinetic energy will be.

A. 0.44 MeV

B. 0.57 MeV

C. 0.89 MeV

D. 0.95 MeV

ANSWER: C

Any wave function can be written as a linear combination of.

A. Eigen vectors

B. Eigen values

C. Eigen functions

D. Operators

ANSWER: C

Which quantity is said to be degenerate when.

A. Eigen vectors

B. Eigen functions

C. Eigen values

D. Operators

ANSWER: B

An electron is trapped in an infinite well of width 1.0 cm. For what value of ‘n’ will the electron have energy of 2 eV.

A. ~ 105

B. ~ 109

C. ~ 108

D. ~ 107

ANSWER: D

The Davsson- Germer experiment is famously known for.

A. The discovery of the electron

B. Demonstrating the wave nature of electron

C. Observing light diffraction

D. Discovering the photo-electric effect

ANSWER: B

The uncertainty principle applies to.

A. Macroscopic particles

B. Microscopic particles

C. Gases

D. Both A & B

ANSWER: B

Uncertainty principle can be understood with the help of.

A. Dalton’s effect

B. Compton’s effect

C. Electron effect

D. Rhombic effect

ANSWER: B

The uncertainty in position and velocity of a particle are 10-10 m and 5.27 x 10-24 ms-1 respectively. The mass of the particle is.

A. 0.92 Kg

B. 0.99 g

C. 0.099Kg

D. 0.92 g

ANSWER: C