1.

Bohr's atomic model can explain:-

1. the spectrum of hydrogen atom only

2. the spectrum of an atom or ion containing one electron only

3. the spectrum of hydrogen molecule

4. the solar spectrum

2.

Which transition of electron in the hydrogen atom emits maximum energy:

1. $2 \rightarrow 1$

2. $1 \rightarrow 4$

3. $4 \rightarrow 3$

4. $3 \rightarrow 2$

3.

An element with atomic mass Z consists of two isotopes of mass number Z-1 and Z + 2. The percentage abundance of the heavier isotope is -

1. 0.25

2. 33.3

3. 66.6

4. 75

4.

There are three energy levels in an atom. How many spectral lines are possible in its emission spectra?

1. One

2. Two

3. Three

4. Four

5.

Arrange the following particles in increasing order of values of e/m ratio: Electron(e), proton(p), neutron(n) and α-particle(α)

1. n,p,e,α

2. n,α,p,e

3. n,p,α,e

4. e,p,n,α

6.

Which of the following species has more number of electrons in comparison with the neutrons?

1. Al^{3+}

2. O^{2-}

3. F^-

4. C

7.

What is the maximum wavelength in the Lyman series of He^+ ion?

1. 3R

2. 1/3R

3. 1/R

4. 2R

8.

How many spectral lines are obtained when an electron jumps from n=5 to n=1 hydrogen atom?

1. 3

2. 4

3. 6

4. 10

9.

Which of the following pair is isodiaphers?

1. $^{14}_{6}C$ and $^{23}_{11}N$

2. $^{24}_{12}Mg$ and $^{23}_{11}C$

3. $^{4}_{2}He$ and $^{16}_{8}O$

4. $^{12}_{6}C$ and $^{15}_{7}N$

10.

Which of the following does not characterise X-rays?

1. The radiation can ionise the gas

2. It causes fluorescence effect on ZnS

3. Deflected by electric and magnetic fields

4. Have wavelength shorter than ultraviolet rays

11.

In photoelectric effect, the kinetic energy of photoelectrons increases linearly with the

1. Wavelength of incident light

2. Frequency of incident light

3. Velocity of incident light

4. Atomic mass of an element

12.

Which of the following has the largest de Broglie wavelength (all have equal velocity)

1. CO_2 molecule

2. NH_3 molecule

3. Electron

4. Proton

13.

Of the following transition in hydrogen atom, the one which gives an absorption line of lowest frequency is

1. n = 1 to n = 2

2. n = 3 to n = 8

3. n = 2 to n = 1

4. n = 8 to n = 3

14.

The number of protons, neutrons and electrons in $^{175}_{71}Lu$, respectively, are:

1. 104, 71 and 71

2. 71, 71 and 104

3. 175, 104 and 71

4. 71, 104 and 71

15.

The energy of an electron in the first Bohr's orbit of H-atom is -13.6 eV. The possible energy value (s) of the excited state (s) for electrons in Bohr's orbits of hydrogen is (are):

(1) -3.4 eV

(2) -4.2 eV

(3) -6.8 eV

(4) +6.8 eV

16.

The wavelength of the radiations emitted when in a H atom, electron falls from inifinity to stationary state 1, is:

1. 15 nm

2. 192 nm

3. 406 nm

4. 91 nm

17.

Which concept contradicts the Bohr Model of an atom?

1. Rutherford Model

2. Heisenberg's Uncertainty Principle

3. J.J. Thomson Model

4. Photoelectric Effect

18.

Electrons are emitted with zero velocity from a metal surface when it is exposed to radiation of wavelength 6800 Å. The work function (W_0) of the metal is

1. 3.109 x 10^{-20} J

2. 2.922 x 10^{-19} J

3. 4.031 x 10^{19} J

4. 2.319 x 10^{-18} J

19.

The ratio of the wavelengths of the last lines of the Balmer and Lyman series is-

1. 4:1

2. 27:5

3. 3:1

4. 9:4

20.

For a subatomic particle, the uncertainty in position is same as that of uncertainty in its momentum. The least uncertainty in its velocity can be given as

1. $\Delta V = \frac{h}{4\pi m^2}$

2. $\Delta V = \frac{1}{2\pi}\sqrt{\frac{h}{m}}$

3. $\Delta V = \frac{h}{2\pi m}$

4. $\Delta V = \frac{1}{2m}\sqrt{\frac{h}{\pi}}$

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