



# ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION

## SOLUTION-29(CLASS-11)

### TOPIC- STRUCTURE OF ATOM

#### SUBTOPIC-BASIC CONCEPT

**SUBJECT – CHEMISTRY**

**DURATION – 30 mins**

**F.M. - 15**

**DATE -03.08.20**



**1.1 A gas absorbs photon of 355 nm and emits at two wavelengths. If one of the emission is at 680 nm, the other is at-**

- a) 1035 nm b) 325 nm c) 743 nm d) 518 nm

**Ans. c**

**1.2 The frequency of light emitted for the transition  $n=4$  to  $n=2$  of  $\text{He}^+$  is equal to the transition in  $\text{H}$  atom corresponding to which of the following?**

- (a)  $n=3$  to  $n=1$  (b)  $n=2$  to  $n=1$  (c)  $n=3$  to  $n=2$  (d)  $n=4$  to  $n=3$

**Ans. b**

**1.3 Which of the following nuclear reactions will generate an isotope?**

- (a) Neutron particle emission (b) Positron emission (c) alpha particle emission (d) Beta particle emission

**Ans. a**

**1.4 Emission of H-atom in the ground state is (-) 13.6 eV, hence energy in the second excited state is-**

- (a) -6.8 eV (b) -3.4 eV (c) -1.51 eV (d) -4.53 eV

**Ans. c**

**1.5 The de-Broglie wavelength of a tennis ball of mass 60g moving with a velocity of 10m/s is approximately-**

- (a)  $10^{-33}$  m (b)  $10^{-31}$  m (c)  $10^{-16}$  m (d)  $10^{-25}$  m

**Ans. a**

**1.6 A dipositive ion  $Z^{++}$  has  $2e^-$  in the K shell, 8 electrons in the L shell and  $8e^-$  in the M shell. Atomic number of Z is-**

- (a) 19 (b) 20 (c) 16 (d) 15

**Ans. b**

**1.7 The number of unpaired electrons in a chromic ion  $\text{Fe}^{+3}$  (atomic number 26) is-**

- (a) 3 (b) 4 (c) 5 (d) 6

**Ans. c**

1.8 Uncertainty in position of a particle of 25g in space is  $10^{-5}$  m. Hence, uncertainty in velocity in m/s is-

- a)  $2.1 \times 10^{-28}$  b)  $2.1 \times 10^{-34}$  c)  $0.5 \times 10^{-34}$  d)  $5.0 \times 10^{-24}$

Ans. c

1.9 The ion that is isoelectronic with NO is-

- a)  $\text{CN}^-$  b)  $\text{O}^{2+}$  c)  $\text{O}^{2-}$  d)  $\text{N}_2^-$

Ans. d

1.10 Consider the ground state of Cr atom. The numbers of electrons with the azimuthal quantum numbers,  $l=1$  and 2 are, respectively-

- (a) 12 and 4 (b) 12 and 5 (c) 16 and 4 (d) 16 and 5

Ans. b

1.11 The correct set of four quantum numbers for the valence electrons of rubidium atom-

- (a) 5,0,0,+1/2 b) 5,1,0,+1/2 c) 5,1,1,+1/2 d) 5,0,1,+1/2

Ans. a

1.12 The exchange of particles considered responsible for keeping the nucleons together are-

- (a) Meson b) electron c) positron d) neutron

Ans. a

1.13 Ionisation energy of  $\text{He}^+$  is  $19.6 \times 10^{-18} \text{ J atom}^{-1}$ . The energy of the first stationary state ( $n=1$ ) of  $\text{Li}^{+2}$  is-

- (a)  $4.41 \times 10^{-16} \text{ J atom}^{-1}$  b)  $-4.41 \times 10^{-17} \text{ J atom}^{-1}$  c)  $-2.2 \times 10^{-15} \text{ J atom}^{-1}$  d)  $8.812 \times 10^{-17} \text{ J atom}^{-1}$

Ans. b

1.14 The electronic configuration of Hg is:

- a)  $1s^2 2s^2 p^6 3s^2 p^6 d^{10} 4s^2 p^6 d^{10} f^{14} 5s^2 p^6 d^{10} 6s^2$  b)  $1s^2 2s^2 p^6 3s^2 p^6 d^{10} 4s^2 p^6 d^{10} f^{14} 5s^2 p^6 d^{10} 7s^2$   
c)  $1s^2 2s^2 p^6 3s^2 p^6 d^{10} 4s^2 p^6 d^{10} f^{14} 5s^2 p^6 d^{10} 8s^2$  d)  $1s^2 2s^2 p^6 3s^2 p^6 d^{10} 4s^2 p^6 d^{10} f^{14} 5s^2 p^6 d^9 6s^3$

Ans. a

1.15 Find the number of unpaired electrons present in  $\text{Zn}^{2+}$ :

- (a) 6 b) 4 c) 0 d) 3

Ans. c

**PREPARED BY: MR. ARNAB PAUL CHOWDHURY**