RACE # 30 PHYSICAL CHEMISTRY

TIME : 30 Min.

SINGLE CORRECT :

1. Supposing the I.P. of hydrogen atom is 960 eV. Find out the value of principal quantum number having the energy equal to – 60 eV :–

(A) n = 2 (B) n = 3 (C) n = 4 (D) n = 5

2. The radiation of low frequency will be emitted in which transition of hydrogen atom :–

(A) n = 1 to n = 4 (B) n = 2 to n = 5 (C) n = 3 to n = 1 (D) n = 5 to n = 2

3. The ionisation potential of a singly ionised helium ion is equivalent to :-

(A) Kinetic Energy of first orbit (B) Energy of last orbit

(C) Average energy in orbits (D) Maximum energy in orbits

4. The ratio of the difference in energy between the first and second Bohr orbit to that between second and third Bohr orbit in H-atom is :-

(A) 4/9 (B) 1/3 (C) 27/5 (D) 1/2

5. The ratio of potential energy and total energy of an electron in a Bohr orbit of hydrogen like species is:-

(A) 2 (B) –2 (C) 1 (D) –1

6. Which is not a correct order of energy for 1st, 2nd & 3rd orbit :-

(A) $E_1 > E_2 > E_3$ (B) $(PE)_1 < (PE)_2 < (PE)_3$

(C) $(KE)_1 > (KE)_2 > (KE)_3$ (D) '1' & '3' both

7. For any H like system, the ratio of velocities of I, II & III orbit i.e. $V_1 : V_2 : V_3$ will be

(A) 1 : 2 : 3 (B) 1 : 1/2 : 1/3 (C) 3 : 2 : 1 (D) 1 : 1 : 1

8. Match the following :-

(A) Energy of ground state of He^+	(i) +6.04 eV
(B) Potential energy of I orbit of H–atom	(ii) –27.2 eV
(C) Kinetic energy of II excited state of He^+	(iii) 8.72×10^{-18}J
(D) Ionisation potential of He^+	(iv) –54.4 eV

(A) A – (i), B – (ii), C – (iii), D – (iv) (B) A – (iv), B – (iii), C – (ii), D – (i)

(C) A – (iv), B – (ii), C – (i), D – (iii) (D) A – (ii), B – (iii), C – (i), D – (iv)

9. Which transition emits photon of maximum frequency :–

(A) second spectral line of Balmer series (B) second spectral line of Paschen series

(C) fifth spectral line of Humphery series (D) first spectral line of Lymen series

10. In an electronic transition H-atom cannot emit :-

(A) Visible light (B) γ - rays (C) Infra red light (D) Ultra violet light