1. The descending order in size of Al, $A1^{3+}$, Mg and Mg^{2+} would be

(A) $Mg > Mg^{2+} > A1^{3+} > Al$ (B) $Mg > Al > Al^{3+} + > M^{2+}$

(C) $Mg > Mg^{2+} > Al > Al^{3+}$ (D) $Mg > Al > Mg^{2+} > A1^{3+}$

2. Ionic radii of

(A) $Ti^{4+} < Mn^{7+}$ (B) $_{35}Cl^{-1} < _{37}Cl^{-1}$ (C) $K^{+} > Cl^{-1}$ (D) $P^{3+} > P^{5+}$

3. The atomic radius of each of the following element is given Which one has incorrect value of it's ionic radius Mg(1.6A°), Si(1.17 A°), P(l.1 A°), S(1.02°)

(A) Mg^{2+} (0.65 A°) (B) Si^{4+} (0.41 A°) (C) P^{3-} (2.12 °) (D) S^{2-} (1.0 A°)

4. Which radius order is correct :-

(A) V.W. radius > Covalent > Metallic (B) V.W. radius > Metallic > Covalent

(C) Metallic > V.W. radius > Covalent (D) Metallic > Covalent > V.W. radius

5. Size in lanthanoide element decreases from left to right due to :-

(A) Inert pair effect (B) Lanthanoid contraction

(C) Diagonal relationship (D) Absence of vacant orbital

6. The calculated atomic radius of Cl and Cu are 99 Pm and 128 Pm. These are :-

(A) Metallic and covalent respectively (B) Both metallic radius

(C) Covalent and metallic respectively (D) Both covalent radius

7. Which d-block metal has almost equal size :-

(A) Sc, Ti (B) Ti, V (C) Sc, Fe (D) Co, Ni

8. Which of the following has the maximum number of unpaired electrons -

(A) Mg^{2+} (B) Ti^{3+} (C) V^{3+} (D) Fe^{2+}

9. Which statement is correct

(A) For potassium, the atomic radius < ionic radius ; but for bromine, the atomic radius > ionic radius

(B) For potassium and bromine both, the atomic radii > ionic radii

(C) For potassium and bromine both, the atomic radii < ionic radii

(D) For potassium, the atomic radius > ionic radius but for bromine, the atomic radius < ionic radius

10. Al^{3+} has a lower ionic radius than Mg^{2+} because

(A) Mg atom has less number of neutrons than Al

(B) Al^{3+} has higher nuclear charge than Mg^{2+}

(C) Their electronegativities are different

(D) Al has a lower ionisation potential than Mg atom

11. In the isoelectronic species, the ionic radii (Å) of N^{3-}, O^{2-} and F^{-} are respectively given by :

(A) 1.36, 1.40, 1.71 (B) 1.36, 1.71, 1.40 (C) 1.71, 1.40, 1.36 (D) 1.71, 1.36, 1.40

12. The correct order of second ionization potential of carbon, nitrogen, oxygen and fluorine is :

(A) C > N > O > F (B) O > N > F > C (C) O > F > N > C (D) F > O > N > C

13. Which of the following is correct order of ionic radius.

(A) $Al^{+3} > Mg^{+2} > Na^{+}$ (B) $Na^{+} > Mg^{+2} > Al^{+3}$ (C) $Mg^{+2} > Na^{+} > Al^{+3}$ (D) $Mg^{+2} > Al/^{+3} > Na^{+}$

14. Which of the following atom has largest size

(A) Ba (B) Cs (C) K (D) Sr

15. From the given set of species, point out the species from each set having least atomic radius:-

(a) O^{-2}, F^{-}, Na^{+} (b) Ni, Cu, Zn (c) Li, Be, Mg (d) He, Li^{+}, H^{-}

Correct answer is

(A) O^{-2}, Cu, Li, H^{-} (B) Na^{+}, Ni, Be, Li^{+} (C) F^{-}, Zn, Mg, He (D) Na^{+}, Cu, Be, He

16. In the ions P^{3-} , S^{2-} and Cl^{-} the increasing order of size is:-

(A) $Cl^{-} < S^{2-} < P^{3-}$ (B) $P^{3-} < S^{2-} < Cl^{-}$ (C) $S^{2-} < Cl^{-} < P^{3-}$ (D) $S^{2-} < P^{3-} < Cl^{-}$

17. Which of the following order of atomic/ionic radius is not correct :–

(A) $I^{-} > I > I^{+}$ (B) $Mg^{+2} > Na^{+} > F^{-}$ (C) $P^{+5} < P^{+3}$ (D) Li > Be > B

18. Select correct order of size of A^{3+} , B^{3+} , C^{3+} :

(If atomic number of A = 58, B = 69 and C = 63)

(A) $A^{3+} > B^{3+} > C^{3+}$ (B) $C^{3+} > B^{3+} > A^{3+}$ (C) $A^{3+} > C^{3+} > B^{3+}$ (D) $B^{3+} > C^{3+} > A^{3+}$

19. If the difference in atomic size of :

Na – Li = x Rb – K = y Fr – Cs = z

Then correct order will be :-

(A) x = y = z (B) x > y > z (C) x < y < z (D) x < y << z

20. Match list I with list II and select the corrrect answer using the codes given below

List I	**List II**
Ion	Radius (in pm)
(A) Li^{+}	(a) 216
(B) Na^{+}	(b) 195
(C) Br^{-}	(c) 60
(D) I^{-}	(d) 95

Codes :

(A) a b d c (B) b c a d

(C) c d b a (D) d c b a

Subjectives

21. Mg^{2+}, O^{2-}, Na^{+}, F^{-}, N^{3-} (Arrange in decreasing order of ionic size)

22. Why Ca^{2+} has a smaller ionic radius than K^{+}.

23. Arrange in decreasing order of atomic size : Na, Cs, Mg, Si, Cl.

24. If internuclear distance between Cl atoms in Cl_2 is 10 Å & between H atoms in H_2 is 2 Å, then calculate internuclear distance between H & Cl (Electronegativity of H = 2.1 & Cl = 3.0).

NCERT EXERCISE 3.12, 13, 16, 19, 20, 25, 38

Answers

RACE # 07

1. (D) **2.** (D) **3.** (D) **4.** (B) **5.** (B) **6.** (C) **7.** (D) **8.** (D) **9.** (D) **10.** (B)

11. (C) **12.** (C) **13.** (B) **14.** (B) **15.** (B) **16.** (A) **17.** (B) **18.** (C) **19.** (B) **20.** (C)

21. $N^{3-} > O^{2-} > F^{-} > Na^{+} > Mg^{2+}$ **23.** Cl < Si < Mg < Na < Cs **24.** r_{HCl} =5.919 A^0