

## 12. GROUP 17 ELEMENTS (VII A GROUP ELEMENTS)

### PREVIOUS EAMCET BITS

1. The correct order of reactivity of hydrogen halides with ethyl alcohol is [EAMCET 2008 M]  
1) HF > HCl > HBr > HI                      2) HCl > HBr > HF > HI  
3) HBr > HCl > HI > HF                      4) HI > HBr > HCl > HF  
Ans: 4

Sol: Order of reactivity of hydrogen halide is HI > HBr > HCl > HF

2. The correct order of vander walls radius of F, Cl and Br is [EAMCET 2006 M]  
1) Cl > F > Br              2) Br > Cl > F              3) F > Cl > Br              4) Br > F > Cl  
Ans: 2

Sol: Vander walls radius order Br (1.95A) > Cl (1.80 A) > (1.35A°)

3. Which one of the following pairs of reactants does not form oxygen when they react with each other [EAMCET 2005 E]  
1. F<sub>2</sub>, NaOH solution (hot, conc)                      2. F<sub>2</sub>, H<sub>2</sub>O  
3. Cl<sub>2</sub>, NaOH solution (cold, dilute)                      4. CaOCl<sub>2</sub>, H<sub>2</sub>SO<sub>4</sub> (dilute, small amount)  
Ans: 3

Sol:  $2\text{NaOH} + \text{Cl}_2 \longrightarrow \text{NaCl} + \text{NaOCl} + \text{H}_2\text{O}$

4. Which of the following is used during the preparation of fluorine by Whytlaw Gray method [EAMCET 200 5M]  
1. aqueous KF              2. aqueous HF              3. molten KHF<sub>2</sub>              4. NH<sub>4</sub>F  
Ans: 3

Sol: In Whytlaw Gray method molten KHF<sub>2</sub> is used as electrolyte

5. The chemical formula of tear gas is [EAMCET 2004 E]  
1. COCl<sub>2</sub>              2. CO<sub>2</sub>              3. Cl<sub>2</sub>              4. CCl<sub>3</sub>NO<sub>2</sub>  
Ans: 4

Sol: The chemical formula of tear gas is CCl<sub>3</sub>NO<sub>2</sub>. It is also called war gas.

6. Which one of the following represents the reaction between fluorine and cold dilute NaOH ? [EAMCET 2004 M]  
1.  $2\text{F}_2 + 4\text{NaOH} \rightarrow 4\text{NaF} + 2\text{H}_2\text{O}$                       2.  $3\text{F}_2 + \text{NaOH} \rightarrow 5\text{NaF} + \text{NaFO}_3$   
3.  $\text{F}_2 + 2\text{NaOH} \rightarrow \text{NaF} + \text{NaOF} + \text{H}_2\text{O}$                       4.  $2\text{F}_2 + 2\text{NaOH} \rightarrow 2\text{NaF} + \text{OF}_2 + \text{H}_2\text{O}$   
Ans: 4

Sol:  $2\text{F}_2 + 2\text{NaOH} \xrightarrow{\text{cold, dil}} 2\text{NaF} + \text{OF}_2 + \text{H}_2\text{O}$

7. Chlorine atom in its third excited state with fluorine to form a compound X. The formula and shape of X are [EAMCET 2003 E]  
1. ClF<sub>5</sub>, Pentagonal                      2. ClF<sub>4</sub>, Tetrahedral  
3. ClF<sub>4</sub>, pentagonal bipyramidal                      4. ClF<sub>7</sub>, pentagonal bipyramidal  
Ans: 4

Sol: Formula is ClF<sub>7</sub> and shape is pentagonal bipyramidal

8. The electron affinity values (in kJ mol<sup>-1</sup>) of three halogens X, Y and Z are respectively -349, -333 and -325. Then X, Y and Z respectively are [EAMCET 2003 M]  
1. F<sub>2</sub>, Cl<sub>2</sub> and Br<sub>2</sub>              2. Cl<sub>2</sub>, F<sub>2</sub> and Br<sub>2</sub>              3. Cl<sub>2</sub>, Br<sub>2</sub> and F<sub>2</sub>              4. Br<sub>2</sub>, Cl<sub>2</sub> and F<sub>2</sub>  
Ans: 2

Sol: EA values are in the order Cl<sub>2</sub> > F<sub>2</sub> > Br<sub>2</sub>

9. What are the products formed when ammonia reacts with excess chlorine? [EAMCET 2002 E]  
1) N<sub>2</sub> and NCl<sub>3</sub>              2) NCl<sub>3</sub> and HCl              3) N<sub>2</sub> and NH<sub>4</sub>Cl              4) N<sub>2</sub> and HCl  
Ans: 2

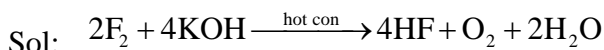
Sol:  $\text{NH}_3 + 3\text{Cl}_2 \xrightarrow{\text{excess}} \text{NCl}_3 + 3\text{HCl}$

10. One mole of fluorine is reacted with two moles of hot and concentrated KOH. The products formed are KF, H<sub>2</sub>O and O<sub>2</sub>. The molar ratio of KF, H<sub>2</sub>O and O<sub>2</sub> respectively is

[EAMCET 2002 E]

- 1) 1 : 1 : 2                      2) 2 : 1 : 0.5                      3) 1 : 2 : 1                      4) 2 : 1 : 2

Ans: 2

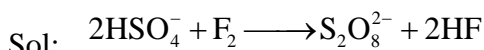


11. Fluorine oxidises  $HSO_4^-$  to .....

[EAMCET 2002 E]

- 1) S<sub>2</sub>O<sub>3</sub><sup>2-</sup>                      2) S<sub>2</sub>O<sub>8</sub><sup>2-</sup>                      3) S<sub>4</sub>O<sub>6</sub><sup>2-</sup>                      4) SO<sub>2</sub>

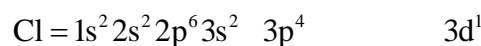
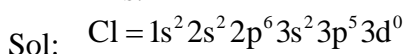
Ans: 2



12. The number of unpaired electrons present in the first excited state of chlorine atom is [EAMCET 2002 E]

- 1) 1                      2) 3                      3) 5                      4) 2

Ans: 2



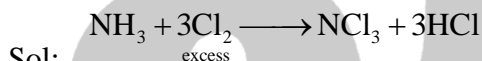
In excited state three unpaired electron are present

13. What are the products obtained when excess ammonia is reacted with chlorine?

[EAMCET 2001 E]

- 1) N<sub>2</sub> and NCl<sub>3</sub>                      2) N<sub>2</sub> and HCl                      3) N<sub>2</sub> and NH<sub>4</sub> Cl                      4) NCl<sub>3</sub> and HCl

Ans: 4

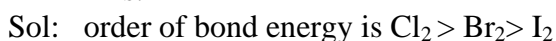


14. Which one of the following order is correct for the bond energies?

[EAMCET 2001 E]

- 1) I<sub>2</sub> > Cl<sub>2</sub> > Br<sub>2</sub>                      2) Br<sub>2</sub> > Cl<sub>2</sub> > I<sub>2</sub>                      3) I<sub>2</sub> > Br<sub>2</sub> > Cl<sub>2</sub>                      4) Cl<sub>2</sub> > Br<sub>2</sub> > I<sub>2</sub>

Ans: 4

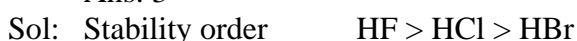


15. Bond dissociation energies of HF, HCl, HBr follow the order

[EAMCET 2001 E]

- 1) HCl > HBr > HF                      2) HF > HBr > HCl                      3) HF > HCl > HBr                      4) HBr > HCl > HF

Ans: 3

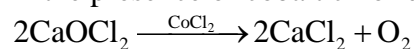
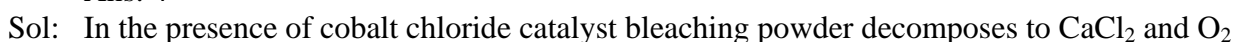


16. In the presence of Cobalt Chloride (CoCl<sub>2</sub>), bleaching powder decomposes to form

[EAMCET 2001 M]

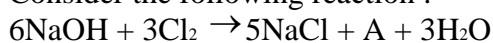
- 1) CaCO<sub>3</sub> & O                      2) ClO & CaO                      3) Cl<sub>2</sub>O & CaO                      4) CaCl<sub>2</sub> & O<sub>2</sub>

Ans: 4



17. Consider the following reaction :

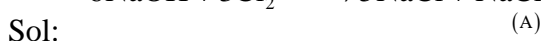
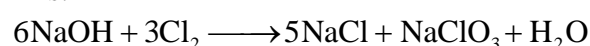
[EAMCET 2001 M]



What is the oxidation number of chlorine in "A"?

- 1) +5                      2) +4                      3) +3                      4) +1

Ans: 1



Oxidation state of chloride in NaClO<sub>3</sub> is +5

18. Which of the following is the strongest oxidising agent?

[EAMCET 2000 M]

- 1) F                      2) Br                      3) Cl                      4) I

Ans: 1

Sol: F is the strongest oxidizing agent

19. What is the oxidation state of chlorine in hypochlorous acid? [EAMCET 2000 E]

- 1) +1                      2) +3                      3) +5                      4) +7

Ans: 1

Sol: Hypochlorous acid is HOCl oxidation state of chloride in HOCl is +1

20. What is the electrolyte used in the electrolytic method of preparation of fluorine?

[EAMCET 2000 M]

- 1) NaF                      2)  $\text{KHF}_2$                       3) KF                      4)  $\text{CaCl}_2$

Ans: 2

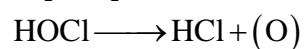
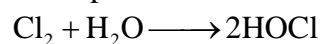
Sol: In electrolytic preparation of  $\text{F}_2$   $\text{KHF}_2$  is used on electrolyte

21. Bleaching action of chlorine occurs in the presence of [EAMCET 2000 M]

- 1)  $\text{O}_2$                       2) moisture                      3) dry air                      4) sunlight

Ans: 2

Sol: In the presence of moisture  $\text{Cl}_2$  form HOCl and liberates easily nascent oxygen



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