T

# FIRST MID TERM TEST - JULY 2019
## STANDARD - XII
## CHEMISTRY

THIRUNELVELI DISTRICT

TIME : 1.15 HOURS                                                    MARKS - 35

### PART - I

**I. CHOOSE THE BEST ANSWER:**                                  10 x 1 = 10

1. In the extraction of aluminium from alumina by electrolysis, cryolite is added to
   (a) lower the melting point of alumina
   (b) remove impurities from alumina
   (c) decrease the electrical conductivity
   (d) increase the rate of reduction

2. Which of the following statements is incorrect?
   I.   A$l$ has greater affinity than Fe, for Oxygen
   II.  Tigstone is magnetic and Wolframite is non-magnetic
   III. Refining of nickel is done by vapour phase refining
   IV.  In Cyanide leaching, Oxygen and Zinc are used as Oxidising agent and reducing agent respectively
   (a) I & II        (b) II & IV        (c) II & III        (d) II only

3. Which of the following is not SP$^2$ hybridised?
   (a) graphite       (b) dry ice        (c) fullerene        (d) graphene

4. The stability of +1 oxidation state increases in the sequence
   (a)  In < T$l$ < Ga < A$l$               (b) T$l$ < In < Ga < A$l$
   (c)  A$l$ < Ga < In < T$l$               (d) Ga < In < A$l$ < T$l$

5. **Match the following:**

| | Types of Silicate | | Ion |
|---|---|---|---|
| A. | Ortho silicate | (i) | $[Si_4O_{11}]_n^{6n-}$ |
| B. | Cyclic silicate | (ii) | $[SiO_2]_n$ |
| C. | Amphibole | (iii) | $[SiO_3]_n^{2n-}$ |
| D. | Phyllo silicate | (iv) | $[Si_2O_5]_n^{2n-}$ |
| | | (v) | $[SiO_4]^{4-}$ |

|     | A | B | C | D |
|-----|-----|-----|-----|-----|
| (a) | (iv) | (i) | (v) | (iii) |
| (b) | (v) | (iii) | (i) | (iv) |
| (c) | (v) | (iv) | (iii) | (i) |
| (d) | (ii) | (v) | (iii) | (i) |

6. If 'a' stands for the edge length of the cubic system: sc, bcc and fcc. Then the ratio of radii of spheres in these systems will be respectively

   (a) $\left(\sqrt{1}a; \sqrt{3}a; \sqrt{2}a\right)$        (b) $\left(\dfrac{1}{2}a; \sqrt{3}a; \dfrac{1}{\sqrt{2}}a\right)$

   (c) $\left(\dfrac{1}{2}a; \dfrac{\sqrt{3}}{2}a; \dfrac{\sqrt{2}}{2}a\right)$        (d) $\left(\dfrac{1}{2}a; \dfrac{\sqrt{3}}{2}a; \dfrac{1}{2\sqrt{2}}a\right)$

7. The ionic radii of A$^+$ and B$^-$ are $0.68 \times 10^{-10}$ m and $1.91 \times 10^{-10}$ m, the coordination number of each ion in AB is
   (a) 8        (b) 2        (c) 6        (d) 4

T                              2              XII - CHEMISTRY

8. The addition of a catalyst during a chemical reaction alters which of the following quantities?
   (a) Internal energy               (b) Activation energy
   (c) Enthalpy                      (d) Entropy
9. The half life period of a radioactive element is 140 days. After 420 days, 100g of the element will be reduced to
   (a) 50g          (b) 25g          (c) 12.5g          (d) 6.25g
10. Assertion A:     The rate of a reaction increases with increase in the concentration of the reactants

    Reason    R:     As concentration increases, the number of collisions between the molecules decreases
    (a)     Both A and R are correct and R explains A
    (b)     A is correct but R is wrong
    (c)     A is wrong but R is correct
    (d)     Both A and R are correct and R does not explain A

## PART - II

**II. Answer Any 3 Questions. (Q.No. 14 is compulsory).**                 3 x 2 = 6
11. What is the difference between minerals and ores.
12. Explain the following terms with suitable examples.
13. Write a note on Fisher Tropsch synthesis.
14. If NaCl is loped with $10^{-2}$ mol percentage of strontium chloride, what is the concentration of cation vacancy?
15. Define average rate and instantaneous rate.

## PART - III

**III. Answer Any 3 Questions. (Q.No. 19 is compulsory)**                 3 x 3 = 9
16. Explain Zone refining process with an example.
17. Complete the following reactions.
    (i)   $Na_2B_4O_7 + H_2SO_4 + H_2O \rightarrow$
    (ii)  $SiCl_4 + NH_3 \rightarrow$
    (iii) $B_2H_6 + NH_3 \rightarrow$
18. Explain schottky defect.
19. Consider the decomposition of $N_2O_5$ to form $NO_2$ and $O_2$ at a particular instant
                                    (g)        (g)        (g)
    $N_2O_5$ disappears at a rate of 2.5 x $10^{-2}$ mol/ $dm^{-3}$ $S^{-1}$. At what rates are
        (g)
    $NO_2$ and $O_2$ formed? What is the rate of the reaction?

20. What is an elementary reaction? Give the differences between order and molecularity of a reaction.

## PART - IV

**IV. Answer All the questions:**                                         2 x 5 = 10
21. (a) The selection of reducing agent depends on the thermodynamic factor. Explain with an example.                                                        (3)
    (b) In the extraction of metal, Ore is first converted into metal oxide before reduction into metal. Why?                                                (2)
                                    *(OR)*
    (c) Describe the structure of diborane.                                (3)
    (d) Write any two uses of silicones.                                   (2)
22. (a) Calculate the percentage efficiency of packing in case of body centred cubic crystal.  (3)
    (b) A face centred cubic solid of an element (atomic mass 60) has a cube edge of 4A°. Calculate its density.                                             (2)
                                    *(OR)*
    (c) Explain briefly the collision theory of bimolecular reactions.     (3)
    (d) Write Arrhenius equation and explain the terms involved.           (2)

SIVAKUMAR, M, Sri Ram matric HSS
Vallam- 627809.
★★★★★