



# S.S. Divine School



Pre – Primary , Primary, Secondary & Higher Secondary

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Std: 12<sup>th</sup>(E.M)

Date:27/07/2022

Subject: Chemistry( 052)

Roll No:

Time: 1 hour

Max. Marks:25

## Part -A

Answer the following questions very briefly. (Each carries 1 mark)

(1)

In face centred cubic unit cell edge length is

- (a)  $\frac{4}{\sqrt{3}}r$       (b)  $\frac{4}{\sqrt{2}}r$       (c)  $2r$       (d)  $\frac{\sqrt{3}}{2}r$

(2)

The appearance and conductivity of which compound is like that of a metallic copper?

- (a)  $TiO_2$       (b)  $ReO_3$       (c)  $CuO$       (d)  $FeO$

(3)

A solid has a structure in which 'W' atoms are located at the corners of a cubic lattice 'O' atoms at the centre of edges and 'Na' atoms at the centre of the cube. The formula for the compound is

- (a)  $NaWO_2$       (b)  $NaWO_3$       (c)  $Na_2WO_3$       (d)  $NaWO_4$

(4)

What is the value of Van't Hoff factor (i) when there is an association of solute takes place ?

- (a) More than one      (b) Zero      (c) More than two      (d) Less than one

(5)

If 9.8 gm of sulphuric acid is dissolved in 250 ml of solution, then molarity of solution is (Atomic weight of H=1,S=32,O=16)

- (a) 0.4 M      (b) 0.2 M      (c) 0.3 M      (d) none of given

(6)

At same temperature, which pair of the following solutions are isotonic solutions?

- (a)  $0.1\text{ M Ba(NO}_3)_2$  and  $0.1\text{ M Na}_2\text{SO}_4$     (b)  $0.1\text{ M urea}$  and  $0.1\text{ M NaCl}$   
(c)  $0.1\text{ M NaCl}$  and  $0.1\text{ M K}_2\text{SO}_4$     (d)  $0.2\text{ M BaCl}_2$  and  $0.2\text{ M urea}$

(7)

. Which of the following aqueous solution will have the lowest freezing point?

- (a)  $0.1\text{ m urea}$  (b)  $0.1\text{ m acetic acid}$     (c)  $0.1\text{ m sodium chloride}$  (d)  $0.1\text{ m calcium chloride}$

(8)

Which out of following solution shows negative deviation from Raoult's law?

- (a) chloroform and acetone    (b) hexane and heptanes  
(c) carbon disulphide and acetone    (d) benzene and toluene

(9)

Which out of following is not Triclinic?

- (a)  $\text{K}_2\text{Cr}_2\text{O}_7$     (b)  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$     (c)  $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$     (d)  $\text{H}_3\text{BO}_3$

## PART -B

### Section-A

Answer the following questions (Each carries 2 marks)

(1)

Write a note on : Metal excess defect due to presence of extra cations on the interstitial sites.

(2)

. Gold ( atomic radius =  $0.144\text{nm}$ ) crystallizes in a face-centred unit cell. What is the length of a side of the cell?

(3)

45 gm of ethylene glycol ( $\text{C}_2\text{H}_6\text{O}_2$ ) is mixed with 600 gm of water. Calculate (a) the freezing point depression and (b) the freezing point of the solution. [ $K_f=1.86\text{ K Kg/mol}$ ]

### Section-B

Answer the following questions as directed (Each carries 3 marks)

(1)

Explain and derive : packing efficiency in FCC structure.

(2)

Explain Raoult's Law for volatile solute and volatile solvent.

**Section -C**

**Answer the following question as directed. (Each carry 4 marks)**

(1)

Write difference between : Crystalline and Amorphous solids.(eight points)

OR

0.6 ml of acetic acid ( $\text{CH}_3\text{COOH}$ ), having density 1.06 g/ml, is dissolved in 1 litre of water. The depression in freezing point observed for this strength of acid was  $0.0205^\circ\text{C}$ . Calculate the Van't Hoff factor and the dissociation constant of acid.( atomic weight of C=12,O=16,H=1)

BEST OF LUCK