
Shri Shantadurga Higher Secondary School, Bicholim-Goa.

First Formative Examination August-2018

Std: XII Science

Answer Key

Marks:20

Date: 11/08/2018

Chemistry

Time: 1 Hr

Instructions:-

(1) All questions are compulsory; however Q. 5 and Q.10 have internal choice.

(2) Section-A consists of 4 questions of 1 mark each.

Section-B consists of 3 questions of 2 marks each.

Section-C consists of 2 questions of 3 marks each.

Section-D consists of 1 question of 4 marks.

(3) Use Log Tables, if necessary. Use of calculators is not allowed.

Section-A

- Q.1. When sodium chloride is heated in vapours of sodium, the colour changes because of. **electron trapped in anionic sites** (1)
- # excess of sodium ions # electron trapped in anionic sites
excess of chloride ions # excess of salt

- Q.2. The IUPAC name of $\text{CH}_3-\text{C}=\text{C}-\text{CH}_3$ is **2-bromo-3-methyl but-2-ene** (1)
- $\begin{array}{c} | \quad | \\ \text{CH}_3 \quad \text{Br} \end{array}$
- # 2,3 – bromo methyl but-2-ene # 2- bromo- 3-methyl but-2-ene
3-bromo-2-methyl but-3-ene # 2-bromo -3- methyl but-3-ene

- Q.3. For the reaction; (1)
- $$2\text{N}_2\text{O}_5(\text{g}) \rightarrow 4 \text{NO}_2(\text{g}) + \text{O}_2(\text{g})$$

The rate of reaction in terms of appearance of NO_2 is $\frac{1\Delta[\text{NO}_2]}{4 \Delta t}$.

$-\frac{4\Delta[\text{NO}_2]}{\Delta t}$ # $\frac{1\Delta[\text{NO}_2]}{4 \Delta t}$ # $-\frac{1\Delta[\text{NO}_2]}{4 \Delta t}$ # $4 \frac{\Delta[\text{NO}_2]}{\Delta t}$

- Q.4. Name any two methods used in **concentration** of an **ore**. (1)
- a) Hydraulic Washing
b) Magnetic Separation
c) Froth Floatation Method
d) Leaching

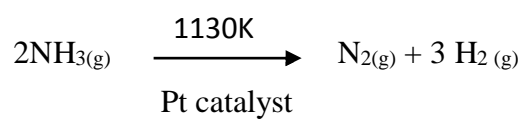
Section-B

- Q.5. The rate of reaction doubles when the temperature changes from 27°C to 37°C. Calculate the energy of activation for the same. (R= 8.314 JK⁻¹mol⁻¹) (2)

OR

- Q.5. The decomposition of a compound is found to follow first order rate law. If it takes 15 minute for 20% of original material to react. Calculate the specific **rate constant**. (2)

- Q.6. Identify and write the **order** of reaction for the following reaction. (2)



Also derive integrated rate equation for the same.

Order of Reaction is= Zero

R → P

$$\text{Rate} = -\frac{d[R]}{dt} = k[R]^0$$

As any quantity raised to power zero is unity

$$\text{Rate} = -\frac{d[R]}{dt} = k \times 1$$

$$d[R] = -k dt$$

Integrating both sides

$$[R] = -k t + I \quad (4.5)$$

where, I is the constant of integration.

At $t = 0$, the concentration of the reactant $R = [R]_0$, where $[R]_0$ is initial concentration of the reactant.

Substituting in equation (4.5)

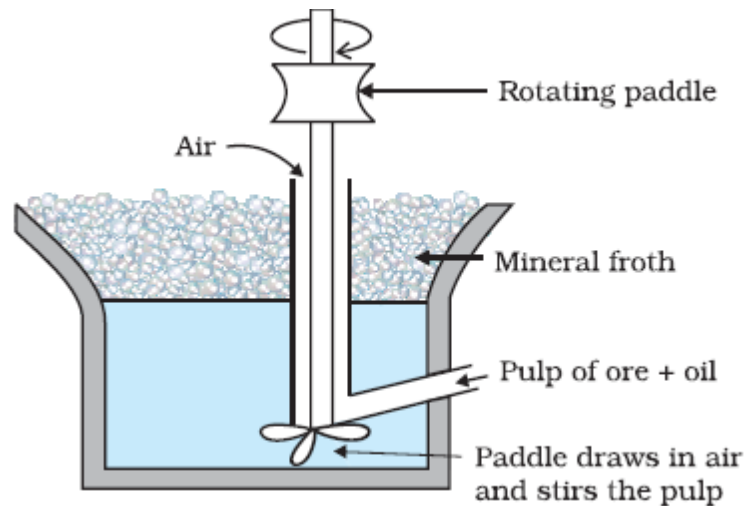
$$[R]_0 = -k \times 0 + I$$

$$[R]_0 = I$$

Substituting the value of I in the equation (4.5)

$$[R] = -kt + [R]_0 \quad (4.6)$$

- Q.7. Draw a neat labelled diagram showing **Froth floatation process** used in concentration of an ore. What is the role of **collectors** used in this process? (2)

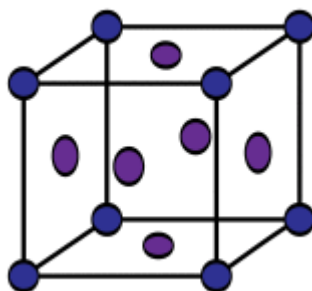


Collectors (e. g., pine oils, fatty acids, xanthates, etc.) enhance non-wettability of the mineral particles

Section-C

- Q.8. Name the following. (3)
- One substance that acts as both Antiseptic and Disinfectant- **Phenol**
 - Type of medicine used for getting relief from pain-**Analgesic**
 - Cationic detergent that is used as hair-conditioner-**Cetyltrimethyl ammonium bromide**

- Q.9. With respect to **Face Centred cubic** unit cell, answer the following questions. (3)
1. Draw the structure.



2. Calculate the total number of atoms per unit cell.

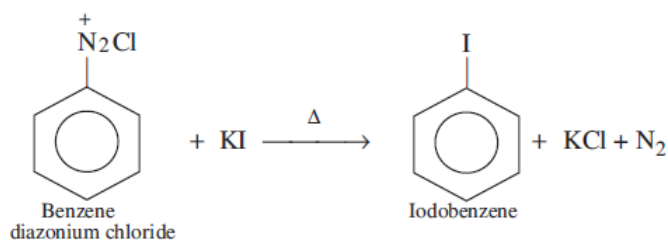
The face centered cubic structure has atoms located at each of the corners and the centers of all the cubic face. Eight eighths from corners atoms and six halves of the face atoms. $8 \text{ Corners} \times 1/8 = 1$ and $6 \text{ Faces} \times 1/2 = 3$ therefore total 4 atoms.

3. Write one point of difference with BCC unit cell.

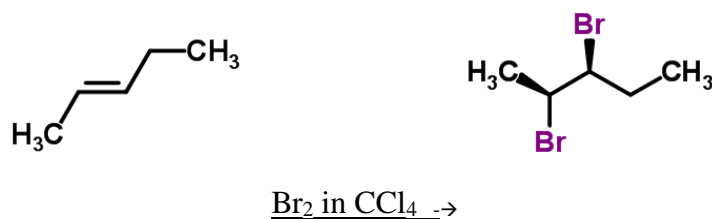
FCC	BCC
No of atoms per unit cell =4	No of atoms per unit cell =2
Lattice points are there at every corner and also at the centre of every face	Lattice points are there at every corner and also one at the body centre

Section-D

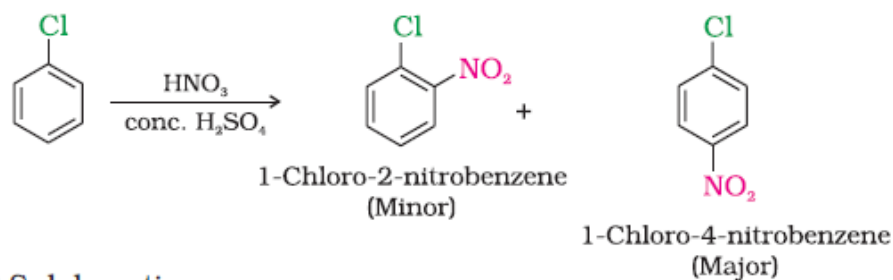
- Q.10. Write the complete reaction for the following **conversions**: (4)
- (a) Benzene diazonium chloride to iodobenzene.



- (b) Pent-2-ene to 2,3-dibromopentane.



(c) Chlorobenzene to 1-chloro-4-nitrobenzene



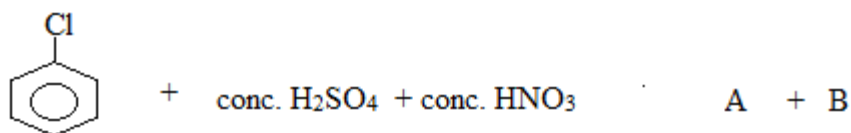
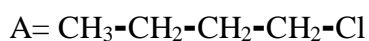
Substitution

(d) Bromopropane to propanamine

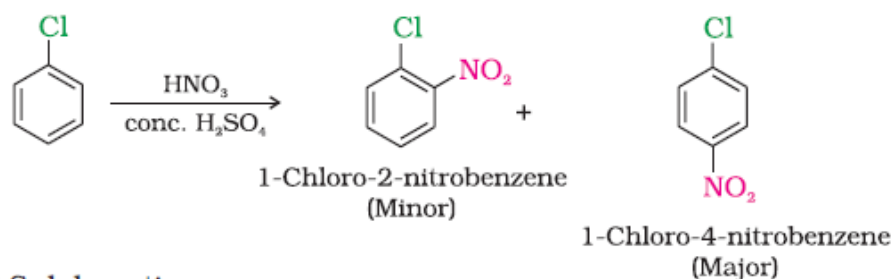


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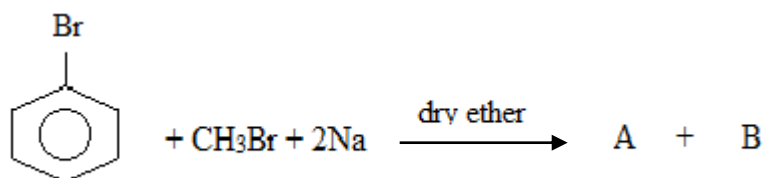
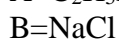
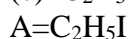
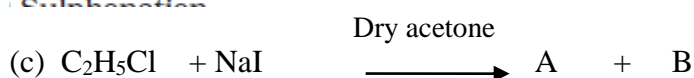
Q.10. Complete the following chemical reaction: (4)



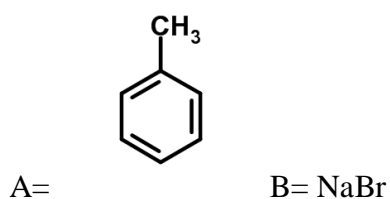
b)



Substitution



(d)



-----THE END-----

