
Shri Shantadurga Higher Secondary School, Bicholim-Goa.**First Formative Examination , August-2019**

Std: XII Science

Answer key

Marks: 20

Date: 10/08/2019

ChemistryTime: 1 Hour

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.
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Section-A

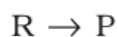
- Q.1. The *vicinal dihalide* amongst the following compound is **2,3-dichlorobutane** (1)
1,3-dichlorobutane # 2,2- dichlorobutane
#2,3-dichlorobutane #2,4- dichlorobutane
- Q.2 If the anionic site is occupied by an electron and it becomes part of the lattice it is (1)
called a **F centre** _
a hole # anionic site
vacancy # F centre
- Q.3 Zirconium or Titanium is refined by a process called **Van-arkel method** (1)
Van-arkel method # Zone refining
Liquefaction # Mond
- Q.4 Write a point of difference between Antiseptic and Disinfectant. (1)

Antiseptic	Disinfectant
Chemicals which are applied on living tissues such as wounds, cuts, ulcers and diseased skin surfaces.,	Disinfectants are applied to inanimate objects such as floors, drainage system, instruments, etc.
Examples are furacine, Soframiciene	Example : 1% Solution of Phenol

Section-B

- Q.5. Derive integrated rate equation for the first order reaction (2)

In this class of reactions, the rate of the reaction is proportional to the first power of the concentration of the reactant R. For example,



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

$$\text{or } \frac{d[R]}{[R]} = -kdt$$

Integrating this equation, we get

$$\ln [R] = -kt + I \quad (4.8)$$

Again, I is the constant of integration and its value can be determined easily.

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

Therefore, equation (4.8) can be written as

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

$$\ln [R]_0 = I$$

Substituting the value of I in equation (4.8)

$$\ln[R] = -kt + \ln[R]_0 \quad (4.9)$$

OR

- Q.5. For a reaction $A+B \rightarrow \text{product}$; rate is doubled when the concentration of 'B' is doubled and rate increases by a factor of 8 when the concentration of both the reactants are doubled. (2)

- (i) Write the rate law for the above reaction.

Ans: $\text{Rate} = K [A]^2 [B]^1$

- (ii) Write the '*unit of rate constant*' and expression for integrated rate equation for '*zero order*' reaction.

Ans: $\text{mol L}^{-1} \text{s}^{-1}$

$$[R] = -kt + [R]_0 \quad \text{OR} \quad k = \frac{[R]_0 - [R]}{t}$$

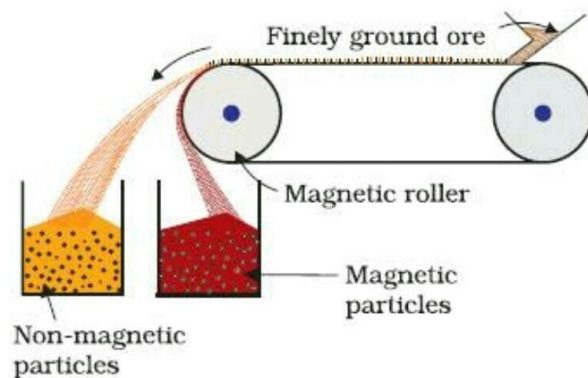
- Q.6. What are Tranquilisers? What is their use and give any two examples of it. (2)

Ans.

Drugs that acts on the central nervous system and helps in reducing anxiety and stress are known as tranquilizers. They are psychotherapeutic drugs used in the treatment of mental diseases. These are used for making sleeping pills.

Seconal, Reserpine are examples of Tranquilizer.

- Q.7. Draw a neat labelled diagram showing **Magnetic separation method** used in (2) concentration of an ore. Write formulas of any two ores of Iron that is found in Goa.



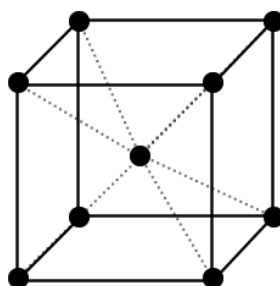
Fe₂O₃ & Fe₃O₄

Section-C

- Q.8. For the reaction, $N_2 + 3H_2 \rightarrow 2NH_3$, the rate of appearance of ammonia was found to be $3.2 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$. Calculate the rate of reaction. (3)

The rate of the above reaction triples when the temperature changes from 50°C to 100°C . Calculate the energy of activation for the reaction. ($R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$)

- Q.9. Draw the structure of **Body Centred cubic** unit cell & answer the following (3) questions.



1. Calculate the total number of atoms per unit cell in it.

$$\text{(i) } 8 \text{ corners} \times \frac{1}{8} \text{ per corner atom} = 8 \times \frac{1}{8} = 1 \text{ atom}$$

$$\text{(ii) } 1 \text{ body centre atom} = 1 \times 1 = 1 \text{ atom}$$

$$\therefore \text{Total number of atoms per unit cell} = 2 \text{ atoms}$$

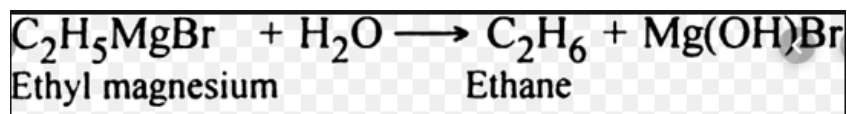
2. What is its Packing efficiency?

Ans: **68%**

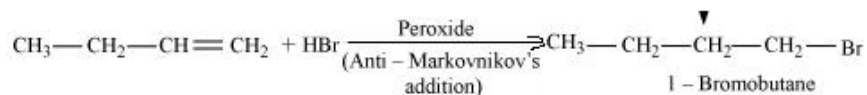
Section-D

Q.10. Write a suitable reaction for the following conversion: (4)

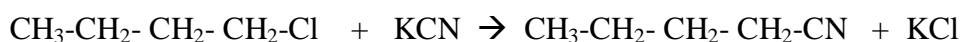
(i) Ethyl magnesium bromide to ethane



(ii) But-1-ene to bromobutane.



(iii) Chloropropane to Butanenitrile.

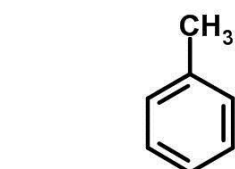
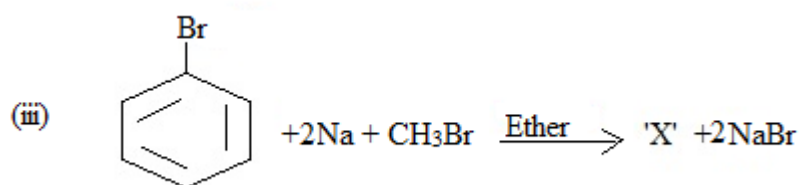
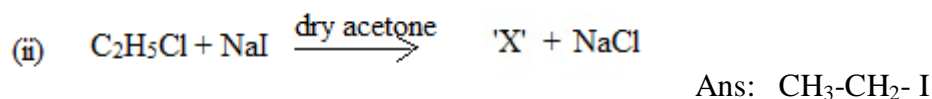
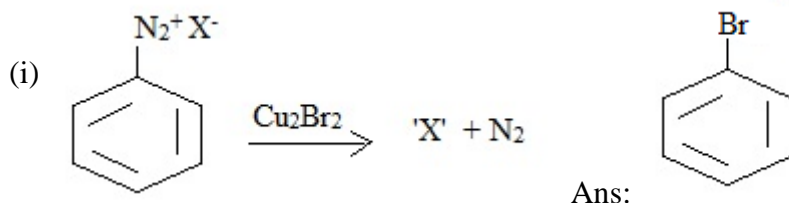


(iv) Ethyl alcohol to ethyl bromide.



OR

Q.10. Identify the compound 'X' formed in the below reaction and write the structure and IUPAC name for the same. (4)



Ans:



Ans : CH_3-NO_2

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