

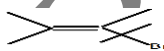
**EQUILIBRIUM CLASSES SHAHJAHANPUR**  
**SUBJECT-CHEMISTRY-CBSE 2015**CLASS- XII  
TIME- 3Hrs.

MM. – 70

**General Instructions :**

1. All questions are compulsory.
2. Question Nos. 1 to 5 are very short answer questions and carry 1 mark each.
3. Question Nos. 6 to 10 are short answer questions and carry 2 mark each.
4. Question Nos. 11 to 22 are short answer questions and carry 3 mark each.
5. Question Nos. 23 carry 4 mark each
6. Question Nos. 24 to 26 are long answer questions and carry 5 mark each.
7. Use log tables if necessary, use of calculators is not allowed

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- Q1) Define peptization  
Q2) Write the IUPAC name



- Q3) Write the balanced equation for complete hydrolysis of  $\text{XeF}_6$   
Q4) What are the physical states of dispersed phase and dispersion medium of froth?  
Q5) What is the Van't Hoff factor for a compound which undergoes tetramerization in an organic solvent?  
Q6) What changes occur in the nature of egg proteins on boiling?  
Q7) What is fuel cell. Write Chemical equations of cell.  
Q8) Analysis shows that Nickel Oxide has formula  $\text{Fe}_{0.96} \text{O}_{1.00}$ . What fraction of Nickel exist as  $\text{Fe}^{2+}$  and  $\text{Fe}^{3+}$  ions?  
Q9) Account for the following:  
(a) Aniline does not undergo Friedel Crafts alkylation  
(b) Although -  $\text{NH}_2$  group is an ortho and para-directing group, nitration of aniline gives alongwith ortho & paraderivatives meta-derivative also.  
Q10) Two elements A and B forms compound  $\text{AB}_2$  and  $\text{AB}_4$ . When dissolved in 20g of Benzene ( $\text{C}_6\text{H}_6$ ), 1g of  $\text{AB}_2$  lowers the freezing point by 2.3K where as 1.0g of  $\text{AB}_4$  lowers it by 1.3K. The molar depression constant for benzene is  $5.1\text{Kkg mol}^{-1}$ . Calculate atomic mass of A and B.  
Q11) Write names of monomer/s of the following polymers and classify them as addition or condensation polymers.  
(a) Teflon  
(b) Bakelite

(c) Natural Rubber

- Q12) The resistance of a conductivity cell containing 0.001M KCl solution at 298K is 1500Ω. What is the cell constant if conductivity of 0.001M KCl solution at 298K is  $0.146 \times 10^{-3} \text{ S cm}^{-1}$ .
- Q13) Show that in a first order reaction time required for completion of 99% is 10 times of half of the reaction.
- Q14) Explain:-  
 i) Electrophoresis  
 ii) Coagulation
- Q15) Write the difference between zone and vapour phase refining with their principle used.
- Q16) Draw any two structure of –  
 i)  $(\text{HPO}_3)$  (ii)  $\text{BrF}_3$
- Q17) The decomposition of hydrocarbon follows the eq<sup>n</sup>  
 $K = (4.5 \times 10^{11} \text{ s}^{-1}) e^{-28000\text{K}/T}$   
 Calculate  $E_a$ .

Q18) How much electricity in Faraday is required to produce –  
 i). 20.0 g of Ca from molten  $\text{Ca Cl}_2$   
 ii). 40.0 g of Al from molten  $\text{Al}_2 \text{O}_3$ .

Q19) What is chelating ligands? Draw structure of tetradentate ligand  
 OR

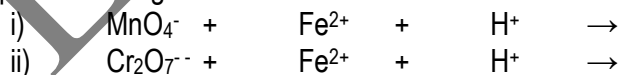
Why explain

- i)  $\text{NH}_3$  is more basic than  $\text{PH}_3$   
 ii) Xe forms compounds with fluorine & oxygen only  
 iii)  $\text{NCl}_5$  does not exist but  $\text{NCl}_3$  exist
- Q20) Arrange-  
 i)  $\text{H}_2\text{O}, \text{H}_2\text{S}, \text{H}_2\text{Se}, \text{H}_2\text{Te}$  (Increasing acidic character)  
 ii)  $\text{NH}_3, \text{AsH}_3, \text{PH}_3, \text{BiH}_3$  (Increasing basic character)  
 OR

How  $\text{HNO}_3$  is manufactured by Ostwald process. Write favorable condition with reaction.

Q21) Write chemical reactions perform during auto reduction .  
 OR

Complete following reaction-



Q22) Explain any five-  
 i) Lanthanoids can not be separated easily  
 ii)  $\text{NH}_2$  group is ortho & para directing

iii) Zwitter ion is amphoteric in nature

Q23 Kashish made a model of the unit cell of diamond. It resembled the unit cell of ZnS. If the unit cell of ZnS has 4 units of ZnS per unit cell. It has the same packing efficiency as ZnS. But diamond is the hardest known substance.

- What is the number of atoms of carbon per unit cell of diamond?
- Why?
- What is the value that Kashish can derive from these facts?

Q24  $K_4[Fe(CN)_4]$  is diamagnetic while  $K_3[Fe(CN)_4]$  is paramagnetic Why?

OR

The rate of  $R^n$  quadruples when the temperature change from 293K to 313 K. Calculate the energy of activation of  $R^n$  assuming that it does not change with temperature.

Q25) Write the Nernst equation and emf of given cell at 298 K.



OR

(a) Complete the following chemical equations for reactions:-



(b) Give an explanation for each of the following observations:-

i) The gradual decrease in size (actinoid contraction) from element to element is greater among the actinoids than among the lanthanoids (lanthanoid contraction)

ii) The greatest number of oxidation states are exhibited by the members in the middle of transition series.

iii) With the same d-orbital configuration ( $d^4$ )  $Cr^{2+}$  ion is a reducing agent but  $Mn^{3+}$  is an oxidizing agent.

26) In a pseudo first order hydrolysis of ester in water, the following results were obtained.

t/s	0	30	60	90
[Ester]/mol L <sup>-1</sup>	0.55	0.31	0.71	0.085

- i). Calculate the average rate of  $R^n$  b/w the time interval 30 to 60 second.
- ii). Calculate the pseudo first order rate constant for hydrolysis of ester.

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## **EQUILIBRIUM CLASSES**

OUR AIM IS TO GIVE RIGHT PATH TOWARDS SUCCESS  
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