ATOMIC ENERGY CENTRAL SCHOOL NO- 4, RAWATBHATA
QUESTION BANK CHEMISTRY CLASS XII
UNIT –I, SOLID SATAE

Very short answer questions (1 mark)

1. Name the parameters that characterize a unit cell.
2. Frenkel defect is not found in alkali metal halides. Why?
3. What happens when ferrimagnetic Fe_3O_4 is heated at 850K & why?
4. Why does white ZnO become yellow on heating?
5. What type of stoichiometric defect is shown by AgCl?
6. In a compound element N makes ccp lattice and element M occupies one – third of tetrahedral voids. What is formula of the compound?
7. A group 14 element is to be converted into n-type semiconductor by doping it with a suitable impurity. To which group should this impurity belong?
8. What do you understand by 12- 16 & 13-15 compounds?
9. What is anisotropy in crystalline solid?
10. Some of the very old glass objects appear slightly milky instead of being transparent. Why?

Short answer questions (2 marks)

1. How many atoms are there in one unit cell of:
   a) Primitive structure b) fcc structure c) bcc structure d) hcp structure?
2. Perovskite, a mineral congaing Ca, O, and Ti elements, crystallizes in the cubic unit cell in which Ca ions makes the uunit cell, oxide ions occupy face centre and Ti ion occupy the body centre. Answer the following:
   i) What is he formula of perovskite?
   ii) What is the oxidation state of Ti in this crystal?
3. Give reasons:
   i) FeO is not formed in stoichiometric composition.
   ii) Electrical conductivity of semiconductors increases with rise in temperature.
4. An element crystallizes in fcc structure. The edge length of unit cell is 150 pm. If 150g of this element have 12×10^{23} atoms, calculate the density of unit cell.
5. A compound forms hcp structure. What is the total no of voids in 0.5 mol of it? How many tetrahedral voids are present in this?
6. i)What change occurs when AgCl is doped with CdCl?
   ii) What type of semiconductor is produced when silicon is doped with boron? (CBSE-2013)
7. Aluminum crystallizes in an fcc structure. Atomic radius of the metal is 125 pm. What is the length of the side of the unit cell of the metal? (CBSE-2013)
8. i) Why does presence of excess of lithium makes LiCl crystals pink?
   ii) A solid with cubic crystal is mad of two elements P and Q. Atoms of Q are at the corners of the cube and P at the body-centre. What is the formula of the compound? (CBSE-2013)
9. An element with molar mass 2.7×10^{-2} kg mol^{-1}, forms a cubic unit cell with edge length 405 pm. If its density is 2.7 x 103 kg m^{-3}, what is the nature of the cubic unit cell?
10. Tungsten crystallizes in body centered cubic unit cell. If the edge of the unit cell is 316.5 pm, what is the radius of tungsten atom?
11. Calculate the number of unit cells in 8.1g of aluminum if it crystallizes in fcc structure. (Atomic mass of Al=27) (CBSE-2017)

Short answer questions (3 marks)

1. Silver crystallizes in fcc lattice. If edge length of the unit cell is 4.077×10^{-8} cm, then calculate the radius of silver atom. (CBSE-2014)
2. Niobium crystallizes in body-centred cubic structure. If density is 8.55g cm^{-3}, calculate atomic radius of niobium. Its atomic mass is 93.

3. Analysis shows that nickel oxide has the formula $Ni_{0.98}O_{1.00}$. What fractions of nickel exist as Ni^{2+} and Ni^{3+} ions?
4. **a.** Iron (II) oxide crystallizes as $Fe_{0.93}O$. Find the $\%Fe^{2+}$ and Fe^{3+} in this compound.
   b. If NaCl is doped with 10^{-3} mole % $SrCl_2$ .What is the concentration of cation vacancies?
5. Al crystallizes in a cubic close packing structure. Its metallic radius is 125 pm. Find the edge length of the unit cell. How many unit cells are there in $1cm^3$ of Al? How many atoms are there in $1cm^3$ of Al?
6. In terms of band theory, explain the difference between a conductor and a semiconductor and give one suitable example for each.
7. Account for the following –
   i) Schottky defects lower the density of crystal.
   ii) When atoms are placed at the corners of all 12 edges of a cube, how many atoms are present per unit cell?
   iii) What change occurs when AgCl is doped with $CdCl_2$?
8. Iron has bcc structure with a cell edge of 286.65 pm. Its density is 7.87 g cm^{-3}. Using this information, calculate Avogadro's number. (At. mass Fe = 56).
9. Give reasons:
   i) Why does presence of excess of lithium makes LiCl crystals pink?
   ii) Conductivity of silicon increases of doping it with phosphorus.
   iii) Both diamond and rhombic sulphur are covalent solids but the sulphur has very low melting point.
10. An element (atomic mass 60) has fcc structure and its density is 6.23g cm-3.The edge length of unit cell is 290 pm. Calculate the number of atoms present in its 200g.
11. i) Based of the nature of intermolecular forces, classify the following solids: Sodium sulphate, Hydrogen.
    ii) What happens when $CdCl_2$ is doped with AgCl?
    iii) Why do ferromagnetic substances show better magnetism than antiferromagnetic substances? (CBSE-2017)

Chapter-2: Solution

Very short answer questions (1 mark)

1. Give an example of solution containing a solid solute in a solid solvent.
2. Give an example of solution containing a liquid solute in liquid solvent.
3. Define mole fraction.(2017)
4. How does the molarity of solution change with temperature?
5. What do you understand by 'colligative properties'? (2011)
6. Why is the vapour pressure of solution of glucose in water lower than that of water?
7. Under what conditions non ideal solution show negative deviation.
8. State any two characteristics of ideal solution.(2014)
9. What is Ebullioscopic constant
10. State Henry's law.(2012)
11. What is an antifreeze?
12. What are de- icing agent?
13. What are isotonic solution.
14. Define Van't Hoff factor.(2014)
15. What is the Van"t Hoff factor for a compound which undergo di-merisation in an organic solvent.
16. What are maximum boiling azeotropes?
17. What are minimum boiling azeotropes?

18. What would be the value of Van"t Hoff factor for a dilute solution of K_2SO_4 in water.
19. Define cryoscopic constant.
20. Define azeotropic mixture.(2013)
21. Define Ideal solution.(2013)
22. Define osmotic pressure. .(2013)
23. Define hypotonic solution
24. State Henry's law.
25. What is Raoult's law? (2014)
26. Define molality . (2016)
27. Define hypertonic solution.
28. Define isootonic solution.
29. Define abnormal molecularmass.

Short answer questions (2 marks)

1. Define van't Hoff factor. What is its value for a electrolytic solution?
2. What is reverse osmosis? Mention one application of the same.(2011)
3. Molality, mole fraction, and mass% are independent of temperature. Why?
4. Differentiate molality and molarity
5. Explain depression of freezing point with suitable graph.(2010 $2014)
6. What will happen when a blood cell is placed in
   a) solution having NaCl concentration less than 0.9 %(mass/volume)
   b) solution having NaCl concentration higher than 0.9 %(mass/volume)? (2011)
7. What is the effect of temperature on the solubility of :a) solid in a liquid ? b) gas in a liquid ? (2012)
8. What are non-ideal solutions? Mention the conditions for a solution to behave non-ideally. (2010)
9. State Henry's law about the solubility of a gas in a liquid.
10. Under what condition van't Hoff factor" i" equal to unity.
11. A and B liqids on mixing produce a warm solution. Which type of deviation from Raoult's law is there?
12. Which will have higher boiling point: 0.1 M NaCl or 0.1 M $BaCl_2$ in water Explain.
13. What is the value of Van't Hoff factor 'i' for K_4 $[Fe(CN)_6]$ aqueous solution assuming complete ionization?
14. Sodium chloride solution freezes at lower temperature than water but boils at higher temperature than water. Explain.
15. What is relative lowering of vapour pressure? Does is depend upon temperature or not?
16. What type of deviations (positive or negative) from an ideal solution will be shown by the solution of cyclohexane and ethanol?
17. Calculate the boiling point of a solution prepared by adding 15.00 g of NaCl to 250.0 g water. (Kb for water= 0.512 K kg mol-1, (Molar mass of NaCl=58.44 g).
18. What are ideal and non-ideal solutions? What types of non-idealism are exhibited by cyclohexane-ethanol mixtures? Give reasons for your answer. (CBSE 2015)
19. When and why molality preferred over molarity in handling solutions in chemistry
20. Concentrated H_2SO_4 is 49% by mass. Density of the solution is 1.5 g/ cm^3. Determine the molality and molarity of the solution.(Molar mass of H_2SO_4 = 98 g/mol)

21. 19. 5% solution of sucrose (Molar mass =342) is isotonic with 0.877% solution of urea. Determine the molar mass of urea.
22. State Raoult's law for a solution containing volatile components. How does Raoult 's law become a special case of Henry's law ?(2013)

Short answer questions (3 marks)

1. Define osmosis and osmotic pressure. Why osmotic pressure method is considered as a better method when compared to other colligative properties to determine molar mass of the solute.
2. The normal freezing point of nitrobenzene ($C_6H_5NO_2$) is 278.82 K. A 0.25 molal solution of a certain solute in nitrobenzene causes a freezing point depression of 2 degree. Calculate the value of K_f for nitrobenzene.
3. 2 g of benzoic acid (C_6H_5COOH) dissolved in 25 g of benzene shows a depression in freezing point equal to 1.62 K. molar depressions constant for benzene is 4.9 K kg mol^{-1}. What is the percentage association of acid if it forms double molecules (dimmer) in solution?(CBSE 2013)
4. A 10% solution (by mass) of sucrose in water has a freezing point of 269.15K. Calculate the freezing point of 10% glucose in water if the freezing point of pure water is 273.15K (2017).
5. Heptane and octane form ideal solution. At 373 K, the vapour pressure of the two liquid components are 105.2 kPa and 46.8 kPa respectively. What will be the vapour pressure of a mixure of 26.0 g of heptane and 35 g of octane?
6. What mass of NaCl (molar mass=58.5 g mol^{-1}) must be dissolved in 65 g of water to lower the freezing point by 7.5°C? The freezing point depression constant is 1.86 K kg mol^{-1} K_f for water. Assume van't Hoff factor for NaCl is 1.87.
7. 19.5 g of Fluoroethanoic acid (molar mass =78) is dissolved in 500 g of water. $\Delta T_f = 10^0C$ .Calculate the Van't Hoff factor and dissociation constant of the acid.(1.86 K kg mol^{-1} K_f for water)
8. K_H for CO_2 in water is 1.67x108 Pa at 298K. Calculate the mass of CO_2 that can be dissolved in 500 ml of water at a pressure of 2.5 atmospheres at 298K. (1 atm= 1.013 x105 Pa) 23. Account for the following:
9. Mention three applications of Henry
10. Calculate the molality of 1M solution of $NaNO_3$. Density of solution is 1.25 g/ cm^3. Molar mass of $NaNO_3$ = 85.
11. A solution is prepared by dissolving 10 g of non-volatile solute in 200 g of water. It has a vapour pressure of 31.84 mm Hg at 308 K. Calculate the molar mass of the solute. (Vapour pressure of pure water at 308 K = 32 mm Hg) (CBSE 2016)
12. What do you understand by depression of freezing point ? Derive the relationship between depression of freezing point and molar mass of the solute. (CBSE 2015)

Long answer questions (5 marks)

1. Account for the following:

a) Intravenous injection is given by using 0.9% NaCl (mass/volume) solution.
b) Dried fruits and vegetables swell when kept in fresh water.
c) The tanks used by scuba divers are diluted with helium.
d) Mountain climbers sometimes get symptoms of a condition known as anoxia.
e) Calcium chloride is added to clear the roads covered by snow.

2. Account for the following:
   1. People taking lot of salty food get affected by edema.
   2. Meat is preserved by salting and fruits are preserved by adding sugar.
   3. People suffering from high blood pressure are advised to take minimum quantity of salty food
   4. Raw mango placed in concentrated salt solution shrivel in to pickle
   5. Dried fruits and vegetables swell when kept in fresh water.

3. a)Explain the type of deviation exhibited by a mixture of:a) ethanol and acetone b) acetone and chloroform.
   b) 2 grams of benzoic acid (molar mass =122) in 25 g benzene gave $\Delta Tf = 1.62K$ Kf of benzene is 4.90 K Kg mol-1. Find % association of benzoic acid if it exists as a dimmer.

Unit-3: ELECTROCHEMISTRY

Very short answer questions (1 mark)

1. What is the effect of temperature on molar conductivity? (2009)
2. Why is it not possible to measure single electrode potential?
3. Name the factor on which EMF of a cell depends.
4. What is the effect of temperature on the electrical conductance of metal?
5. What is the effect of temperature on the electrical conductance of electrolyte?
6. What is the relation between conductance and conductivity? (2012)
7. What is the Debye-Huckel-Onsagar equation? (2010-compt)
8. Why does a dry cell become dead even if it has not been used for a long time?
9. Write the overall reaction taking place in rusting. (2014)
10. Write the reaction taking place in the cell: $Al/Al^{3+}||\ Cu^{2+}/Cu$.
11. Why Na cannot be obtained by the electrolysis of aqueous NaCl solution?
12. What is the use of platinum foil in the hydrogen electrode?
13. Why Λ^o_m for CH_3COOH cannot be determined experimentally? (2013)
14. Why is it necessary to use a salt bridge in a galvanic cell? (2014-compt)
15. Why does mercury cell gives a constant voltage throughout its life?(2015)
16. What is the role of $ZnCl_2$ in a dry cell? (2013)
17. Why does the conductivity of a solution decrease with dilution? (2012)
18. Suggest two materials other than hydrogen that can be used as fuels in fuel cells.
19. Express relation between conductivity and molar conductivity? (2008)
20. Which reference electrode is used to measure the electrode potential of other than hydrogen electrodes.
21. Out of zinc and tin, which one protects iron better even after cracks and why ?
22. Suggest a way to determine the Λ^o_m value of water.
23. What is meant by limiting molar conductivity? (2010)
24. Write unit of molar conductivity.

Short answer questions (2 marks)

25. How many Faradays are required to produce 21.58 g of silver from a silver nitrate solution?
26. Calculate the quantity of electricity (Coulombs) necessary to deposit 100.00 g of copper from a $CuSO_4$ solution.
27. How many minutes will take to plate out 40.00 g of Ni form a solution of $NiSO_4$ using a current of 3.450 amp?

28. What is the equivalent weight of a metal if a current of 0.2500 amp causes 0.5240 g of metal to plate out a solution undergoing electrolysis in 1 hour?
29. How many hours will it take to plate out copper in 200.0 ml of a 0.01M Cu^{2+} solution using a current of 0.200 amp?
30. A constant current of 0.912 A is passed through an electrolytic cell containing molten $MgCl_2$ for 14.5 h. What mass of Mg is produced?
31. Reduction potentials of 4 metals A, B, C and D are-1.66 V, + 0.34 V, +0.80 V and - 0.76 V. What is the order of their reducing power and reactivity ?
32. Using a current of 4.75 A, how many minutes does it take to plate out 1.50 g of Cu from a $CuSO_4$ solution? (2012)
33. How can you increase the reduction potential of an electrode for the reaction : $M^{n+}(aq) + ne^- \rightarrow M\ (s)$
34. Indicate the reactions which take place at cathode and anode in fuel cell.
35. Explain Kohlrausch's law of independent migration of ions. (2010)
36. Write the electrode reactions for anode and cathode in a mercury cell.(2011)
37. How does conc. of sulphuric acid change in lead storage battery when current is drawn from it ?
38. Why is alternating current used for measuring resistance of an electrolytic solution?
39. Suggest two materials other than hydrogen that can be used as fuels in fuel cells.
40. How many moles of Hg will be produced by electrolysing1.0 M $Hg(NO_3)$ solution with a current of 2.00 A for 3 hours. ($Hg(NO_3$=200.6 g/mol) (2010)

Short answer questions (3 marks)

1. A constant electric current deposits 0.3650 g of silver metal in 12960 seconds from a solution of silver nitrate. What is the current? What is the half reaction for the deposition of silver?
2. A metal cup of surface area 200 cm^2 needs to be electroplated with silver to a thickness of 0.200 mm. The density of silver is 1.05 x 10^4 kg $m^{-3.}$ The mass of a silver ion is 1.79 x 10^{-25} kg and the charge is the same magnitude as that on an electron. How long does the cup need to be in the electrolytic tank if a current of 12.5 A is being used?
3. A current of 2.75 amperes is used to electrolyze a solution of copper(II) sulfate. How long will it take to deposit 10.47 grams of copper? (2016)
4. A voltaic cell consists of a copper electrode in a solution of copper(II) ions and a palladium electrode in a solution of palladium(II) ions. The palladium is the cathode and its reduction potential is 0.951 V.
   (a) Write the half-reaction that occurs at the anode.
   (b)If E° is 0.609 V, what is the potential for the oxidation half-reaction?
   (c)What is Keq for this reaction?
5. 5.77 g of zinc is deposited at the cathode when a current of 7.1 amperes passes through an electrolytic cell for 40. minutes. What is the oxidation state of the zinc in the aqueous solution?
6. Draw a graph between Λ_m and concentration for strong and weak electrolyte. (2012)
7. The conductivity of 0.02M solution of NaCl is 2.6×10-2S cm^{-1}. What is its molar conductivity ?
8. Give products of electrolysis of an aqueous solution of $AgNO_3$ with silver electrode.

9. Calculate the equilibrium constant, K for the reaction in Zn-Cu cell at 298 K, where standard potential of Zn & Cu are -.076 V and 0.34 V respectively.

Long answer questions (5 marks)

1. a. Calculate emf of the following cell at 298 K :
   $Mg(s) + 2Ag^{+}(0.0001M) \rightarrow Mg^{2+}(0.130\ M) + 2Ag(s)$
   b. How much electricity in term of Faraday is required to produce 40 gram of Al from Al_2O_3? (Atomic mass of Al = 27 g/mol)
2. a. Predict the product of electrolysis of an aqueous solution of $CuCl_2$with an inert electrode.
   b. Calculate the potential of hydrogen electrode in contact with a solution whose pH is 10.
   a. If a current of 0.5 amp flows through a metallic wire for 2 hours, how many electrons would flow through the wire ?
   b. How much electricity is required in Coulomb for the oxidation of 1 mole of FeO to Fe_2O_3.
3. a. The conductivity of a 0.20M solution of KCl at 298K is 0.0248 S cm^{-1}. Calculate molar conductivity.
   b. Write chemistry of rusting.
4. Define conductivity and molar conductivity for a solution of an electrolyte. The resistance of conductivity cell containing 0.001M KCl solution at 298K is 1500. What is the cell constant if the conductivity of 0.001M KCl solution at 298K is 0.146×10^{-3}S cm^{-1}. (2012)
5. a. Two metals A and B have reduction potential values - 0.76 V and + 0.34 V respectively. Which of these will liberate $H_2$from dil. H_2SO_4.
   b. Depict the galvanic cell in which the reaction $Zn(s) + 2Ag^{+} \rightarrow Zn^{2+} + 2Ag(s)$ takes place. Further show :
   (a) Which of the electrode is negatively charged ?
   (b) The carriers of the current in the cell.
   (c) Individual reaction at each electrode.

6. (i) Depict the galvanic cell in which the reaction
   $Zn(s) + 2Ag^{+} \rightarrow Zn^{2+} + 2Ag(s)$ takes place. Further show:
   (a) Which of the electrode is negatively charged?
   (b) The carriers of the current in the cell.
   (c) Individual reaction at each electrode.
   (ii) mention two application of Kohlrausch's Law

VALUE BASED QUESTIONS (4 Marks)

Q1. People are advised to limit the use of fossil fuels resulting in Green House Effect leading to a global rise in temperature of earth. Hydrogen provides an ideal alternative in fuel cells.
(a) Write electrode reactions in H_2-O_2fuel cells.
(b) Can we use CH_4 in place of H_2? If yes, then write the electrode reaction at anode.
(c) How is green house effect reduced by the use of fuel cells?
(d) Write the values associated with preference to fuel cells.

Q. 2. In Apollo space programs, H_2-O_2fuel cell was used.
(a) Explain why fuel cell is preferred in space programme.
(b) Mention the values associated with the decision of using fuel cells.
(c) Can we use the fuel cells in automobiles?
(d) How can we increase efficiency of fuel cells

Q. 3.Ira, a student of science, went with her father to buy a battery for their invertor and camera. They found two types of batteries, one a lead storage and other a Ni-Cd storage battery. Later was more expensive but lighter in weight. Ira insisted topurchase costlier Ni-Cd battery.

(a) In your opinion, why Ira insisted for Ni-Cd battery ? Give reasons.
(b) Write the values associated with above decision.
(c) Write overall cell reaction during the discharge.
(d) Can this cell be sealed unlike lead storage cell ?

Q. 4. Shyam bought a dry cell which was very old. He puts it in torch. The torch did not glow. He found that the cell was dead.
(a) Why did this happen ?
(b) Write the overall cell reaction during discharge.
(c) What value did you derive from it?
(d) Why is dry cell not rechargeable?

Q. 5.Sakshi, a student of Chemistry of class XII, found that some kitchenwares made of iron or copper were galvanized. Sakshi told her mother not to use these cookwares and advised her mother to get them plated with tin instead of zinc.
(a) Why Sakshi was against using the cookwares plated with zinc ?
(b) What would happen if cookwares plated with zinc were used in kitchen ?
(c) Can the cookwares be plated with tin ?
(d) What values are associated with the advice of Sakshi ?
(e) What would happen if the tin plating on cookwares made of copper or iron is broken ?

UNIT -4; TOPIC- CHEMICAL KINETICS

Very short answer questions (1 mark)

1. Define instantaneous rate?
2. What do you mean by Rate of reaction?
3. For which type of reaction order & molecularity have same value?
4. Define order of reaction? (CBSE 2008, 11)
5. Give an example of Pseudo first order reaction?
6. Under which condition bimolecular reaction will be first order reaction?
7. A reaction is 50% complete in 2Hr & 75 % complete 4 Hr .What is the order of reaction? (CBSE 2006, 14)
8. Can a reaction have zero activation energy?
9. Give an example of zero order & first order reaction?
10-What is the molecularity of the reaction $Cl \rightarrow \frac{1}{2} Cl_2$
11. Define Pseudo order Reaction?
12. What is half life of Reaction?
13. Define Activation Energy?
14. Write the characteristics of Rate Constant?
15. Write Arrhenius Eq. & its importance?

Short answer questions (2 marks)

1. For the reaction $C_{12} H_{22}O_{11} + H_2O \rightarrow C_6H_{12} O_6 + C_6H_{12} O_6$ write rate law, order of reaction, molecularity of reaction & rate expression.
2. Show that the time required to complete $\frac{3}{4}^{th}$ first order reaction is twice the time required to complete half of reaction? (CBSE 2009, 13)

3. Differentiate b/w order of reaction & molecularity of reaction? (CBSE 2010, 13, 15)
4. Define the following – i) Elementary Reaction ii) Complex Reaction
5. Differentiate b/w rate of reaction & rate constant of reaction?
6. For the reaction R→P, the conc. of reactant changes from .03 M to .02 M in 25 min. Calculate average rate?
7. A reaction is 2^{nd} order with respect to a reactant. How is the rate of reaction affected if the conc. of the reactant is i) reduce to half ii) make double
8. The rate constant for a first order reaction is 60 S^{-1} How much time it take to reduce the initial conc. of reactant to its 1/16 th value ? (CBSE 2008, 13) Ans- 4.62×10^{-2} S
9. for the reaction –
   $2NO + O_2 \rightarrow 2NO_2$ rate law is, Rate = $K [NO]^2 [O_2]$
   Propose a mechanism for the reaction
10. Sucrose decomposes in acid solution into glucose & fructose & follow I^{st} order .Its $t_{1/2}$ = 3 hr. What fraction of sucrose left after 8 Hr. (Ans.=158)

Short answer questions (3 marks)

1. A reaction 50% complete in 20 min.at 300 K & the same reaction at 350 K take 5 min. for 50% completion. Calculate the Ea energy if the reaction is Ist order. (Ans. 24.206 KJ mol^{-1}) [2006]
2. The rate constant for the first order decomposition of H_2O_2 is given by the following equation: Log k= 14.34 -1.25×10^4 K/T
Calculate Ea for the reaction& at what temp. Will its half life be 256 min?
(Ans =669K & Ea= 239.34 KJ mol^{-1})
3. The rate of reaction quadruples when temp. changes from 293 K to 313 K Calculate Ea for the reaction.(Ans. = 52.85 KJ mol^{-1})
4. The half life of radioactive C^{14} is 5730 yrs an archaeological sample of wood show 80% C^{14} activity. Calculate the age of sample. (Ans= 1845 yrs) [2012]
5. Define the following term- a) Activation Energy b) Effective collision
   c) Collision frequency d) Rate Constant
   e) Elementary Reaction f) Threshold Energy
6. Consider a first order reaction A → Products with k= 2.0×10^{-2} s^{-1} Calculate the conc. of A left after 100sec.if the initial conc. of A = 1.0 mol l^{-1} . (ans. 0.135 molL^{-1})
7. What will be the unit of Rate constant (K) for Zero order , First order & Second order reaction , concentration is expressed in mol^{-1} & time in Sec.
8. The activation energy of a reaction is 75.2 KJ mol^{-1} in absence of catalyst & 50.14 KJ mol^{-1} with catalyst. How many times the rate of reaction grow in presence of catalyst, if reaction proceed at at 298 K (Ans. 1.5 times)
9. Express the rate of following reaction in term of disappearance of H_2&N_2
   $H_2+N_2 \rightarrow 2 NH_3$ also write overall rate of reaction.
10. The rate constant of a reaction at 500K& 700 K are 0. 025 & 0.075 S^{-1} respectively. Calculate Ea & A of the reaction.

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