



AMBITION ACADEMY H.S.S.

Mid-Baneshwor, Ktm

Model question-1 (NEB)

Class: XI
Time: 3hrs

Sub: Chemistry

F.M: 64
P.M: 30

Group 'B'

8x5=40

Attempt all questions.

12. Consider the reaction;



- How many molecules of nitrogen are produced when 0.2 mole of ammonia is completely burnt? 2
- What volume of O_2 are required to produce 144g of water at STP? 1
- How many molecules of ammonia are used to produce 44.8 liters of nitrogen at STP? 2

or

Define ionization energy and electron affinity. How do 'Nuclear charge' influence the magnitude of the ionization energy? Electron affinity of chlorine is higher than that of fluorine..Why?

1+1+ 2+1

13. State Le-chatelier's principle. What would be the effect on the position of equilibrium of the reaction?



- adding Cl_2
- adding PCl_3
- addition of inert gas at constant volume
- increasing temperature (the reaction is endothermic in the forward reaction)
- adding a catalyst.

14. State and explain Graham's law of diffusion. 5

Or

i) State Faraday's law of electrolysis. 2

ii) A current of 15A was passed through a solution of CrCl_2 for 45 minutes.

- How many gram chromium is deposited on the cathode? 1.5
- Calculate the volume of Cl_2 that is obtained at the anode at 1 atm and 273 K. 1.5

Or

15. Hydrogen chloride gas is prepared in laboratory by reacting table salt with conc. sulphuric acid..

- Hydrogen bromide is not prepared the same method as for hydrogen chloride. Why? 1
- Differentiate hydrogen chloride gas and hydrochloric acid. 2
- How would you detect the presence of chloride ion in HCl ? 2

16.5 Write down the principle and self explanatory diagram for manufacture of ammonia by Haber's process. How does ammonia react with copper sulphate solution? 2+1.5+ 1.5

17.i) Define allotrope and isotope? 1+1

- Write down the use of fullerene and white phosphorous. 1.5
- Write down the isotopes of hydrogen. Which isotope is radioactive? 1+0.5

18. Define following isomers with an example.

- positional isomer
- Functional isomer
- Tautomer
- geometrical isomer
- optical isomer

19) Define +M and -M effect. Draw the resonating structure of phenol nitrobenzene. 1+1+1.5+1.5

Group 'C

Attempt **all** questions. $3 \times 8 = 24$

20. i) Differentiate the followings

- a) Crystalline and amorphous solids. 1.5
- b) Evaporation and boiling point 1.5
- c) Continuous and batch process 1.5
- d) Micro and macronutrient 1.5

ii) Define liquid crystals. Write down its two uses. 1+1

Or

i) Write down the essential postulates of Bohr's atomic model. 2.5

ii) Explain hydrogen spectra in light of Bohr's theory. 4

iii) Why does hydrogen gas show large number of line spectra though H-atom contains one electron? 1.5

21 Explain the Chemistry of Down's Process for the extraction of sodium.

What happen when:

i) Sodium is treated with ammonia.

ii) Washing soda is heated,

iii) CO_2 is passed through NaOH solution. $5+1+1+1$

22. i) What are foreign elements? How is the presence of nitrogen in the organic compound is identified? Write down the reactions. 1+3

ii) What is meant by homologous series? 2

iii) Write down the IUPAC. name of third homology of aldehyde and carboxylic acid. 1+1



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Model question-2 (NEB)

Class: XI
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Sub: Chemistry

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P.M: 30

Group'B'

8x5=40

Attempt all questions.

5 x 5=25

12. A metal x forms two oxides A and B. 3 g of each of A and B contains 0.720 g and 1.160g of oxygen respectively.

- Calculate the weight of oxygen in two oxides A and B. 1
- Calculate the mass of metal in gram which combine with one gram of oxygen in each case 2
- What chemical law do these data illustrate? state the law 2

13 Given,



If 1 kg of pure CaCO_3 are added in a solution containing 0.7665kg HCl.

- Find the limiting reactant. 1
- What mass of unreacted reagent left over? 1
- How many litres of CO_2 are produced at NTP? 1
- What mass of CaCl_2 is obtained 1
- Calculate the % yield of CaCl_2 when the actual yield obtained is 0.985kg. 1

14. a. Define oxidation and reduction in terms of electronic concept. 0.5+0.5

- b. You are given the equation $\text{Zn} + \text{HNO}_3 \longrightarrow \text{Zn}(\text{NO}_3)_2 + \text{N}_2\text{O} + \text{H}_2\text{O}$
- Explain with electronic concept which substance is oxidised and which is reduced? 0.5 +0.5
 - Balance the equation by Ion electron or oxidation number method, 2.5
 - Indicate the number of HNO_3 molecules acting as an oxidizing agent and as an acidic agent.. 0.5

15. In metallurgical operation, calcination, roasting and smelting are the important steps to convert the ore into oxide into metal.. Answer the followings,

- What are the difference between calcination and roasting? 2
- What is the purpose of smelting? 1
- Distinguish between flux and slag with an example of each. 2

16. Write down the definition of

- Aufbau's rule
- De-Broglie equation
- Heisenberg's uncertainty principle
- Pauli exclusion principle
- Hund's rule. 1+1+1+1

17. What are K_p and K_c ? How are they related?

18. Urea is the first organic compound synthesized in laboratory by Wohler 1825 by heating ammonium cyanate, which gives big blow to vital force theory proposed by Berzelius. Now a days urea is very much demanded chemical fertilizer in agricultural industry in our country. By viewing importance of urea
- How is it manufactured commercially? 3.5
 - What are its qualities to become such important fertilizer? 1.5

Or

Write down the principle for the manufacture of nitric acid with well labeled flow sheet diagram by Ostwald's process.. How is HNO_3 is detected in the solution? Write down chemical reaction. 2+1.5+1.5

19. i) State Boyle's law and Charles's law. 2

- A hydrocarbon contains 10.5g of carbon per gram of hydrogen. 1
vapour of hydrocarbon at 127°C and 1 atm pressure weight 2.8g. Find molecular formula. 3

Or

The important aromatic compound 'B' which is prepared by heating the compound 'A' with NaOH and CaO in the ratio 3:1 by mass. compound 'B' is also obtained by heating phenol with zinc dust. Answer the following:

- Identify A and B 0.5 +0.5
- What happens when the compound A is heated with methyl chloride in the presence of anhydrous AlCl_3 ? 1
- How would you convert acetylene into A? 1
- How does A react with chlorine in the presence of sunlight? 1
- Write down the two uses of A. 1

Group 'C

Attempt **all** questions. $3 \times 8 = 24$

$2 \times 10 = 20$

- 20 i) Write the chemical principle and stepwise procedure involved in the manufacture sodium carbonate by Solvay's process and sketch a well-labeled diagram for it. 6
- ii) What are the merits of this process?. 1
- iii) How would you convert Na into sodium carbonate ? 1
21. i. Discuss how Rutherford's nuclear model of atom is introduced on the basis of alpha particle scattering experiment. Point out the limitation of the model, 4+1+1+2
- ii. How is the nuclear model of atom improved by Bohr?
- iii. Why is Bohr's atomic model appeared to be defective in the light of Heisenberg's uncertainty principle?

Or

- i) Identify the hybridization of the indicates atom in each of the following molecules.
- (a) Be in BeF_2 (b) B in BF_3 (c) N in NH_3 1.5
- ii) Draw the shapes of sp and sp^2 hybrid orbitals. 1
- iii) How do you predict the molecular geometry of NH_3 based on VSEPR model. 2
- iv) Draw the Lewis structure of CO and H_2SO_4 2
- v) Define hydrogen bond with an example. 1.5

22. How would you acquaintance with

- i) Wurtz reaction
- ii) Catalytic hydrogenation
- iii) Dehydration
- iv) Dehalogenation
- v) Ozonolysis
- vi) Fredel-craft's reaction.
- vii) Inductive effect
- viii) Octane number ?