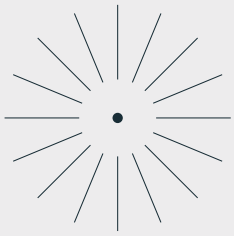
Karnataka Board

Mid Term Question Paper



2nd PUC
Question Paper

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PUC-II YEAR MIDTERM EXAMINATION-2022

Time : 3 Hours 15 Minutes | SUBJECT : CHEMISTRY (34) | MARKS : 70

Instructions : i) The question paper has four parts. All parts are compulsory.

ii) Part-A carries 10 marks. Each question carries 1 mark. Part-B carries 10 marks. Each question carries 2 marks. Part-C carries 15 marks. Each question carries 3 marks. Part-D carries 35 marks. Each question carries 5 marks.

iii) Write balanced chemical equations and diagrams wherever necessary.

iv) Use log tables and simple calculators if necessary. (Use of scientific calculators is not allowed)

PART - A

I. Answer ANY TEN of the following questions : (Each carries 1 marks) **10X1=10**

1) Define the term molarity.

2) Name the law behind the dissolution of CO_2 gas in soft drinks under high pressure.

3) How does the size of blood cells changes when placed in an aqueous solution containing more than 0.9% (m/v) sodium chloride ?

4) What is the role of cryolite in the extraction of aluminium ?

5) Give an example of metal purified by Van-Arkel vapour phase refining.

6) Which noble gas is most abundant in atmospheric dry air ?

7) Write the structure of hypochlorous acid.

8) $CH_3-Br+AgF \longrightarrow CH_3-F+AgBr$, write the name of the reaction.

9) Name the sugar present in grapes.

10) Which vitamin deficiency causes the diseases pernicious anemia ?

PART - B

II. Answer ANY FIVE of the following questions : (Each carries 2 marks) **5X2=10**

11) Calculate the number of atoms present in the BCC.

12) Write any two difference between Schottky defect and Frenkel defect.

13) What are paramagnetic substances ? Give an example.

14) Mention two types of motion of electrons which originates the magnetic moment of a substance.

15) Complete the following reaction :

i) $R-CH_2-OH \xrightarrow{Cu573k}$ .....

ii) $CH_3-CH=CH_2+H_2O \xrightarrow{H^+}$ .....

16) What is Lucas reagent ? Between primary and tertiary alcohols which one of these will react faster with Lucas reagent.

17) Among alcohols and phenols which one is more acidic ? Give reason.

18) Explain Williamson's ehter synthesis and write the general equation.

PART- C

III. Answer ANY FIVE of the following questions : (Each carries 3 marks) **5X3=15**

19) Explain froth flotation process.

20) Draw labelled diagram of Hall-Herolut electrolyte cell for extraction of aluminium. Write anode and cathode reaction.

21) Explain zone refining for purification of ultra pure-metals.

22) Describe the manufacture of ammonia from Haber's process.

23) Write the chemical reaction involved in the contact process.

24) Write the anomalous properties of nitrogen.

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25) Complete the following reactions :

i) $2KClO_3 \xrightarrow[\text{heat}]{MnO} $

ii) $SO_{2(g)} + Cl_{2(g)} \longrightarrow$

iii) $Cl_2 + 3F_{2(excess)} \xrightarrow{573k}$

26) a) Which is the strongest acid among halide ? Give one reason. (2)

b) How does electronegativity of halogen vary down the group. (1)

PART - D

IV. Answer ANY THREE of the following questions. (Each carries 5 marks) **3X5=15**

27) a) Calculate the packing efficiency in a unit cell of cubic close packing structure.

b) Give the differences between crystalline and amorphous solids with respect to shape and melting point.

28) a) Calculate the number of atoms present in the unit cell of simple (primitive) cubic crystal. (2)

b) Silver forms a ccp lattice. The edge length of its unit cell is 408.6 pm. Calculate the density of silver ($N_A=6.022\times10^{23}$, Atomic mass of Ag=108 $gmol^{-1}$) (2)

c) Give an example of substance showing ferromagnetism. (1)

29) a) The boiling point of pure solvent is 353.23 k. When 1.2 g of a non-volatile solute was dissolved in 60g of pure solvent, the boiling points is raised to 354.11k. Calculate the molar mass of the solute. kb for solvent is 3.13k kg mol^{-1}. (3)

b) State Henry's law. Write its mathematical form. (2)

30) a) What happens to the solubility of a gas in a liquid with increase in temperature ? Give reason. (2)

b) What are minimum azeotropes ? Give an example. (2)

c) Give an example of natural semipermeable membrane. (1)

31) a) Vapour pressure of pure liquids 1 & 2 are 240 & 400 mmHg respectively. Calculate partial vapour pressure of 2. The tota. vapour pressure is 420 mm Hg. (3)

b) What is reverse osmosis ? Mention one important application of it. (2)

PART - E

V. Answer ANY FOUR of the following questions. (Each carries 5 marks) **4X5=20**

32) a) Explain the mechanism of SN^1 reaction with example. (3)

b) Mention the major product formed in the following reactions. (2)

i) 2-bromopentane $\xrightarrow{\text{alc.KOH}\,\Delta}$

ii) $CH_3-CH_2-Br + KCN$ Alc $\xrightarrow{\text{Heat}}$

33) a) Explain Sandmeyer's reaction and write general equation. (2)

b) Explain Friedel - crafts reaction alkylation of chlorobenzene. (2)

c) What is asymmetric carbon ? (1)

34) a) Write the mechanism of acid catalysed dehydration of ethanol. (3)

b) How anisole reacts with acetyl chloride in the presence of anhydrous $AlCl_3$? Write the chemical equation for the reaction. (2)

35) a) Explain how is Hinsberg's reagent is used to distinguish the primary, secondary and tertiary amines. (3)

b) Which is more basic among aqueous solution of aniline and ammonia ? Give one reason. (2)

36) a) $CH_3CONH_2 \xrightarrow{Br_2/NaOH} P \xrightarrow{NaNO_2/HCl\ 273K} Q.$

What is P & Q ? Name the reaction occurring in first step. (3)

b) Explain diazotization reaction of aniline. (2)

37) a) Write Haworth structure of Maltose. (2)

b) Name water soluble & water insoluble components of starch. (2)

c) Name the protein present in Hair. (1)

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