**Guess Paper 2013**

**Class – XII**

**Subject –** **CHEMISTRY**

MM : 70 Time: 3 hours

***General Instructions*** *–*

1. ***All questions are compulsory.***
2. ***Marks for each question are indicated against it.***
3. ***Questions number 1 to 8 are very short answer questions and carry 1 mark each.***
4. ***Questions number 9 to 18 are short answer questions and carry 2 marks each.***
5. ***Questions number 19 to 27 are also short answer questions and carry 3 marks each.***
6. ***Questions number 28 to 30 are long answer questions and carry 5 marks each.***
7. ***Use Log tables, if necessary. Use of calculators is not allowed****.*

1. What is Peptide linkage ? [1]

2. Write the structure of Benzene-1,2-dicarbaldehyde. [1]

3. Which transition metal in the first transition series shows highest paramagnetism ? [1]

4. Give the IUPAC name of [Co (NH3)5Br] SO4. [1] 5. Which is a stronger reducing agent : Cr2+ or Fe2+ ? Why ? [1]

6. What are Reducing sugars ? [1]

7. What is Shape selective catalysis ? [1]

8. Why does the conductivity of a solution decrease with dilution ? [1]

9. A body centred cubic element of density 10.5 g cm-3 has a cell edge of 409 pm.Calculate [2]

its atomic mass.

10. i) Ionic solids conduct electricity in molten state but not in solid state.Why ? [2]

ii) Which substances show Frenkel defect ?

11. Zinc/Silver cell is used in hearing aids and electric watches : [2]

Zn -----🡪 Zn2+ + 2 e- , E0 = -0.76 V

Ag2O + H2O + 2e- --🡪 2Ag + 2 OH- , E0 = 0.344 V

i)Which are the oxidized and reduced species in the above cell ?

ii) Find E0 of the cell and ΔrG0 in joules.

12. Define conductivity and Molar conductivity for the solution of an electrolyte. Discuss their [2]

Variation with concentration.

13. Explain why [Cr(NH3)6]3+ is paramagnetic while [Ni(CN)4]2- is diamagnetic. [2]

**OR**

Draw the structures of geometrical isomers of [Fe(NH3)2(CN)4]- and [Pt(NH3)(H2O)Cl2]

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14. i) State Raoult’s law for a binary solution containing volatile components. [2]

ii) What is the effect of the addition of non volatile solute on the vapour pressure of pure liquid ?

15. Arrange the following : [2]

i) In increasing order of basic strength : C6H5NH2,C6H5N(CH3)2,(C2H5)2NH & CH3NH2.

ii) In increasing order of boiling point : C2H5OH,(CH3)2NH,C2H5NH2.

16. State reasons : [2]

i) pKb value of Aniline is more than that of Methylamine.

ii) Aromatic primary amines cannot be prepared by Gabriel phthalimide synthesis.

**OR**

What happens when :

i) Aniline is treated with concentrated Sulphuric acid.

ii) Aniline is treated with Sodium nitrite and dilute Hydrochloric acid at 273 K.

17. Bring about the following conversions : [2]

i) Phenol to Acetophenone.

ii) Ethanal to Butan-2-ol.

18. Explain the following : [2]

i) Boiling point of Ethanol is higher than that of Methoxymethane.

ii) Mixture of o-nitrophenol and p- nitrophenol can be separated easily.

\*19. An **antifreeze** is a chemical additive which lowers the freezing point of a water-based liquid. [1+2]

An antifreeze mixture is used to achieve *freezing-point depression* for cold environments and

also achieves boiling-point elevation("anti-boil") to allow higher coolant temperature. Freezing

and boiling points are colligative properties of a solution, which depend on the concentration of

the dissolved substance. Because water has good properties as a coolant , antifreeze is used

in internal combustion engines and solar water heaters. The purpose of antifreeze is to

prevent a rigid enclosure from undergoing catastrophic deformation due to expansion when

water turns to ice.

i) What are Colligative properties ?

ii) Determine the molarity of an antifreeze solution containing 250 g water mixed with 222 g

Ethylene glycol( C2H6O2).The density of this solution is 1.07 g/ml.

20. a) Draw the structures of following molecules : i) H4P2O5 ii) XeOF4 [3]

b) Why do Noble gases have very low boiling points ?

21. State reasons for the following : [3]

i) The third Ionisation enthalpy of Mn is exceptionally high.

ii) Cu+ is colourless but Cu2+ is coloured.

iii) Among transition metals,the highest oxidation state is exhibited in Oxoanions of a metal.

22. Describe the principle involved in each of the following processes of metallurgy : [3]

i) Froth floatation method

ii) Zone refining of metals

iii) Elecrolytic refining

23. Complete the following reactions : [3]

i) CH3CH=C(CH3)2 + HBr -------🡪

ii) (CH3)3CBr + KOH ------ETHANOL,Heat-----🡪

iii) C6H5Cl + Mg ---------🡪

24. i)What are Essential and Non-essential Amino acids ? Give one example of each. [3]

ii) What are Nucleic acids ?

25. i) What are Antibiotics ? Give examples. [3]

ii)Why is the use of aspartame limited to cold drinks and cold foods ?

iii)Give one difference between Antiseptic and Disinfectant.

26. i) Differentiate between Thermoplastic and Thermosetting polymers with example. [2+1]

ii) Name one Biodegradable polymer and its monomers.

27. i) How are the two Emulsions different from one another ? Give example for each. [3]

ii) Explain what is observed when an electrolyte NaCl is added to Hydrated ferric oxide solution .

28. a) The thermal decomposition of HCOOH is a first order reaction with a rate constant of 2.4 x10-3 s-1 [3+2]

at a certain temperature.Calculate how long will it take for three-fourths of initial quantity of

HCOOH to decompose.

b) Explain the following terms :

i) Rate of a reaction.

ii) Activation energy of a reaction.

**OR**

a)The half life for radioactive decay of 14C is 5730 years.An archeological artifact containing wood had only 80% of the 14C found in a living tree. Estimate the age of the sample.

b) Explain the following terms :

i) Order of a reaction.

ii) Molecularity of a reaction.

29. a) Give simple chemical tests to distinguish between the following pairs of compounds - [2+3]

i) Phenol and Benzoic acid ii) Acetophenone and Benzaldehyde

b) An Organic compound ‘A’ (Molecular formula C8H16O2) was hydrolysed with dilute sulphuric acid

to give a carboxylic acid ‘B’ and an Alcohol ’C’. Oxidation of ‘C’ with chromic acid produced ‘B’.

‘C’ on dehydration gives But-1-ene.Identify A ,B and C and write all the reactions involved .

**OR**

a) Illustrate the following name reactions –

i) Aldol condensation reaction ii) HVZ reaction

b) How will convert the following :

i) Benzoic acid to Benzamide

ii) Propanoic acid to Propanol

iii) Propanal to Butanone

30. a) Complete the following reactions :- [2+3]

i) XeF2 + H2O --------------🡪

ii) PH3 + CuSO4 ------------🡪

b) Account for the following :

i) Pentavalent Bismuth is a strong oxidizing agent.

ii) Hydrogen fluoride is much less volatile than Hydrogen chloride.

iii) Nitrogen shows Catenation property less than Phosphorus.

**OR**

a)What happens when :

i) Chlorine is passed through a hot concentrated solution of NaOH.

ii) Ammonium dichromate is heated.

b) Explain the following observations :

i) Red phosphorus is less reactive than white phosphorus.

ii) Dinitrogen is inert at room temperature.

iii) Interhalogens are more reactive than Halogens.

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