

TERM-2

CHEMISTRY THEORY 043

MM-35.

TIME - 2 hours

GENERAL INSTRUCTIONS

Read the following instructions carefully.

1. There are 12 questions in this question papers with internal choice.
2. SECTION -A Q No. 1-3 are very short answer questions carrying 2 marks each.
3. SECTION-B Q No. 4-11 are short answer questions carrying 3 marks each.
4. SECTION-C Q No. 12 is case based question carrying 5 marks each.
5. All questions are compulsory.
6. Use of calculators are not allowed.

SECTION-A

1. Define the following terms
 - a) Peptization
 - b) Reversible sols.
2. Write any two difference between order and molecularly of reaction.
3. Arrange the following in increasing order of basic strength
 - i) $C_6H_5NH_2$, $C_6H_5CH_2NH_2$, $C_6H_5NHCH_3$
 - ii) $C_6H_5NH_2$, $CH_3CH_2NH_2$, CH_3NHCH_3

SECTION-B

4. Calculate emf of the following cell at 25 ° C.

Fe | Fe²⁺ (0.001M) || H⁺ (0.01M) | H₂ (1 bar) | Pt(s)

E° (Fe²⁺ | Fe) = -0.44V E° (H⁺ | H₂) = 0.00V

5. The decomposition of NH₃ on platinum surface is a zero order reaction. What are the rates of production of N₂ and H₂. If k= 2.5* 10 to power -4. Mol⁻¹ L s⁻¹ ?

OR

Calculate the half- life of a first order reaction from its rate constants given below:

(I) 200 s⁻¹. (ii) 2 minute⁻¹ (iii) 4 year⁻¹.

6. Give reasons for the following observations:

- (I) Physisorption decreases with increase in temperature.
- (ii) Addition of alum purifies the water.
- (iii) Brownian movement provides stability to the colloidal solution.

OR

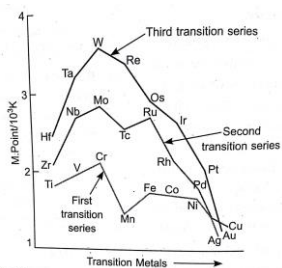
Explain what is observed

- (I) when a beam of light is passed through a colloidal sol.
- (ii) An electrolyte, NaCl is added to hydrated ferric oxide sol.
- (iii) Electric current is passed through a colloidal sol.

7. How would you account for the following?

- (I) The transition elements have tendency for complex formation.
- (ii) There is gradual decrease in the atomic sizes of transition elements in a series with increasing atomic numbers.
- (iii) Zn is not considered as a transition elements.

8. Observe the graph of transition metal and their melting point and answer the questions:

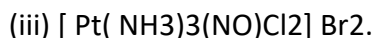
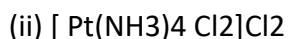
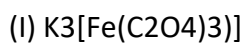


(I) Why does tungsten has highest melting point?

(ii) Why are transition metals less electropositivity than S- block elements?

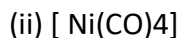
(iii) Which element in 3d series has lowest enthalpy of atomisation and why?

9. Write IUPAC name of the following



OR

Compare the following complexes with respect to their shape, magnetic behaviour and the hybrid orbitals involved.



10. How will you convert the following

(I) propanone to propan -2 - ol

(ii) Ethanal to 2- hydroxypropanoic acid.

(iii) Toluene to benzoic acid.

11. An aromatic compound 'A' on treatment with aqueous ammonia and heating forms

compound 'B' which on heating with Br₂ and KOH forms a compound 'C' of molecular formula C₆H₇N. Write the structure and IUPAC names of compounds A, B and C.

OR

Write short notes on the following

(I) Carbylamine reaction

(ii) Diazotization reaction.

(iii) Hoffman's bromamide reaction.

SECTION-C

12. An organic compound contains 69.77% carbon, 11.63% hydrogen and rest oxygen.

The molecular mass of the compound is 86. It does not reduce Tollen's reagent but forms an addition compound with sodium hydrogen sulphite and gives a positive Iodoform test. On vigorous oxidation, it gives ethanoic and propanoic acid. Write the possible structure of the compound.

KV No. -1 KUNJABAN AGARTALA

PGT CHEMISTRY

Mejren Milan Bage.

