

Seat No. _____

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SARDAR PATEL UNIVERSITY
B.Sc. Semester-III Examination [CBCS]
Subject : Inorganic Chemistry [US03CCHE21]

Date: 29/11/2021, Monday

Time: 03.00 to 05.00 PM.

Total Marks: 70

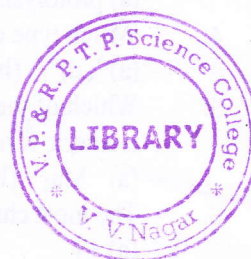
- Que1. Choose the correct option and rewrite the answer of the following. 10
1. The basic character ofcannot explain by arhenius concept.
(a) KOH (b) NaOH (c) NH₃ (d) Ba(OH)₂
 2. Which of the following is not hard acid?
(a) Ca⁺² (b) Co⁺² (c) Be⁺² (d) Sr⁺²
 3. The reaction between organic amide and liquid NH₃ is called.....
(a) protolysis (b) ammonolysis (c) solvation (d) neutralisation.
 4. Which type of d-orbital present in dsp² hybridization.?
(a) d_z² (b) d_{xy} (c) d_{yz} (d) d_x²-d_y²
 5. Which of the following square planar complexes exists as cis and trans isomeric form.?
(a) Ma₄ (b) Ma₂b₂ (c) Ma₃b (d) Mab₃c
 6. The most characteristic oxidation state of lanthanide is.....
(a) +1 (b) +2 (c) +4 (d) +3
 7. The richest source of rare earth is...
(a) monazite (b) bastnaesite (c) sea water (d) xenotime
 8. Ce⁺⁴ ion gives..... Colour.
(a) pink (b) red (c) green (d) Orange-red.
 9. All the mono nuclear carbonyls have.....M-CO bonds.
(a) circular (b) linear (c) spiral (d) zig-zag.
 10. The numbers of bridge carbonyl groups present in Fe₂(CO)₉ is.....
(a) 1 (b) 2 (c) 3 (d) 0
- Que.2 Fill in the blanks: 08
1.no. of protonated O-atoms present in H₃PO₄ (3/2)
 2. is a non-ionising solvent. (CCl₄/NH₃)
 3. [Fe(CN)₆]⁻⁴ complex ion has.....no. of unpair electron. (0/4)
 4. CrCl₃.6H₂O has.....nos.of hydrated isomers.(2/3)
 5. [Xe] 4f⁷ 5d¹ 6s² is electron configuration of(Eu / Gd)
 6. Actinides have.....magnetic moments than lanthanides (less/grater).
 7. Metal atom in carbonyl has.....oxidation state.(one/zero)
 8. is not liquid at ordinary temperature. [Fe(CO)₅ /W(CO)₆].

(P.T.O)

Que.3 Answer the following questions (any ten)

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1. Prove that AgI_2^- is stable but AgF_2^- does not exist.
2. What is soft and hard bases?
3. Give merits of using liq. NH_3 as a solvent.
4. Give difference between inner orbital and outer orbital octahedral complexes.
5. Write any four limitations of VBT.
6. What is coordination isomerism? Give one example.
7. Give the use of lanthanide as a misch-metal alloy.
8. Define: trans-uranium elements..
9. What is actinide contraction.?
10. What is meta nitrosyl? Give two examples.
11. Calculate EAN of $\text{Fe}_3(\text{CO})_{12}$.
12. Give all the preparation of $\text{Ni}(\text{CO})_4$.



Que.4 Answer the following questions. (any four)

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1. Give brief account on Lewis acid-base concept.
2. Discuss chemical reactions of none-aqueous solvent SO_2 .
3. Give assumptions of Valence bond theory and using this theory identify the hybridisation, geometry and magnetic properties of $[\text{Fe}(\text{CN})_6]^{4-}$.
4. Discuss all the methods for distinguish between cis and trans isomers.
5. Write a note on Lanthanide contraction and its consequences.
6. Give name, symbol, atomic number and electronic configuration of Actinide series.
7. Discuss structure and nature of M-CO bonding in carbonyls.
8. Give preparation, properties and structure of $\text{Co}_2(\text{CO})_8$.

(2)