

SEAT No. _____

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[97]
Eng.

SARDAR PATEL UNIVERSITY

B.Sc.Sem-3 Examination -2020

Course code-US03CCHE21

Sub-Inorganic Chemistry

Date : - 31-12-2020, Thursday

Time : - 2 :00 P.M to 4 :00 PM

Total Marks:-70

Q-1 Choose correct option.

(10)

(1) Which are conjugated acid and base of OH^- ?

(a) H_2O , H^+ (b) O^{2-} , H_3O^+ (c) H_2O , O^{2-} (d) H_2O , O^-

(2) AlCl_3 has acidic property. This is limitation of which theory?

(a) Arrhenius (b) lowry bronsted (c) lewis (d) (a) and (b) both

(3) Which are non-aqueous solvent of following?

(a) Liq.NH_3 (b) liq.HCN (c) Bromine tri fluoride (d) all of above.

(4) What is EAN of $[\text{Co}(\text{CN})_6]^{4-}$?

(a) 39 (b) 37 (c) 35 (d) 36

(5) How many mole of AgCl precipitation by reaction of one mole $\text{CoCl}_3 \cdot 5\text{NH}_3$ with more AgNO_3 ?

(a) 2 (b) 3 (c) 1 (d) 0

(6) $[\text{Co}(\text{NH}_3)_5\text{Cl}] \text{Br}$ and $[\text{Co}(\text{NH}_3)_5 \text{Br}] \text{Cl}$ are examples of which isomerism ?

(a) Ionization (b) hydrate (c) conformation (d) linkage

(7) Which element has more basicity than Tb (Terbium) of following ?

(a) Nd (b) Dy (c) Tm (d) Yb

(8) Which element has more type of oxidation state in actanone ?

(a) Pa (b) U (c) Pu (d) Bk

(9) How many bonds between C and O in carbonyl legend ?

(a) 2 (b) 1 (c) 4 (d) 3

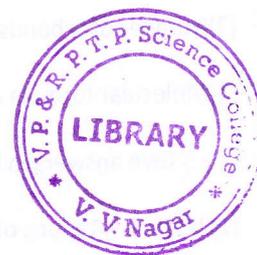
(10) Which orbitals are use for π bond in $[\text{Cr}(\text{CO})_6]$?

(a) Three 3d and one 4s (b) only four 3d orbital

(c) Only three 3d orbital (d) only two 3d orbital

Q-2 Decide sentence is true or false and fill blank gaps.

(8)



- (1) $\text{CH}_3\text{COOH} + \text{OH}^- \rightleftharpoons \text{CH}_3\text{COO}^- + \text{H}_3\text{O}^+$ reaction.
- (2) Hard acid and hard base decided absolutely.
- (3) In $[\text{Fe}(\text{CN})_6]^{4-}$, CN^- is strong ligand, hybridization is d^2sp^3 and magnetic property is paramagnetic.
- (4) Geometry isomerism is not possible in $[\text{Ni}(\text{CO})_4]$.
- (5) Common electron configuration of lanthanide series is -----
- (6) ${}^{242}_{96}\text{Cm} + {}^4_2\text{He} \longrightarrow \text{-----} + 2({}^1_0n)$
- (7) Number of π bonds in $\text{Mn}_2(\text{CO})_{10}$ is -----
- (8) Molecular formula of sodium nitro prusside is -----

Q – 3 Give answers in brief. (Any ten) (20)

- (1) Write limitations of Arrhenius theory.
- (2) Explain Acidic property of hydride compounds of 15th group.
- (3) Discuss limitations of Lewis theory.
- (4) Explain hydrate isomerism with suitable examples.
- (5) What is geometrical isomerism? Give classification.
- (6) Write any four limitations of valence bond theory.
- (7) Write short note on magnetic property of lanthanide series.
- (8) Write short note on oxidation state of actinide elements.
- (9) What is lanthanide contraction?
- (10) What is metallic carbonyl compound? Give classification with examples.
- (11) Explain M-NO bond type, structure and nature of nitrosyl
- (12) Explain preparation and property of metallic nitrosyl carbonyl compounds.

Q – 4 Give answers the following. (Any four) (32)

- (1) Write note on hard soft acid base principle.
- (2) Explain classification of solvent and also explain reaction occur in liq. NH_3 like self ionization, acid base reaction, precipitation reaction.
- (3) Explain structure of $[\text{Ni}(\text{CN})_4]^{2-}$ by valence bond theory.
- (4) Write note on total possible geometric isomerism of ML_6 compounds.



- (5) Give name, symbol and electron configuration of lanthanide series.
- (6) Explain ion exchange method and solvent extraction method for separation of lanthanide elements.
- (7) Write preparation of $[\text{Fe}(\text{CO})_5]$ and discuss structure.
- (8) Write preparation of $[\text{Fe}_2(\text{CO})_9]$ and discuss structure.

