

Exam - T0833 sem - III
SE/chemical Engg. CBCGS (REV -
- 2017) / T403 - Engg. Chemistry - I
time - 3 hrs. QP. Code - 24846 marks - 80.

Q. NO-1 - a) BrF_3 - Hybridization
structure $2\frac{1}{2}$ mark
explanation

SF_4 ——— " ———→ $2\frac{1}{2}$ M

b) $\text{Fe}_2(\text{CO})_9$ - properties → 2 marks

bonding &
structure → 3 marks.

c) Tetra (ammine) (ethylene di
amine) platinum (IV) chloride
→ $2\frac{1}{2}$ marks.

Diamido, tetra ammine cobalt (III)
nitrate → $2\frac{1}{2}$ marks.

d) Nitration reaction → 01 M
Mechanism → 02 M
Explanation with diagram → 02 M

e) Norrish type II reaction
process \longrightarrow 3 M

explanation \longrightarrow 2 M

f) resonance reacⁿ with examples

\longrightarrow 2 $\frac{1}{2}$ Marks

Inductive effect with eg \longrightarrow 2 $\frac{1}{2}$ Marks

Q. 2 - a) $[Al(OH)(H_2O)_5]^{2+} \longrightarrow$ 2 $\frac{1}{2}$ Mark

$[Ru(NH_3)_5(N)_2]Cl_2 \longrightarrow$ 2 $\frac{1}{2}$ M.

b) O₂ atom transfer reacⁿ \longrightarrow 2 M.

explanation \longrightarrow 3 M.

c) Jablonski's diagram \longrightarrow 2 M

explanation \longrightarrow 3 M.

d) NO - e⁻ic configuration \longrightarrow 01 M

MO - diagram \longrightarrow 02 M

bond order \longrightarrow 01 - M

magnetic properties \longrightarrow 01 M.

Q-3-a) Defⁿ - geometrical isomerism → 01 M

Pt complex with ammonia → 03 M
structures

explanation → 01 M.

b) five correct comparison
points betⁿ VBT & MOT → 5 M.

c) formation of carbanion → 3 M
structure of Carbanion → 02 M.

d) Defⁿ of carbene → 01 M.
formation of carbene → 04 M.

Q-4-a) Defⁿ of EAN → 01 M.

$\text{Pt}(\text{NH}_3)_4^{+2}$ → 02 M

Pt - 78 + 4 74 12 86 Rn.

$[\text{Fe}(\text{H}_2\text{O})_4]^{2+}$ → 02 M

Fe - 26 + 2 24 12 36 Kr.

a) ~~4~~ - b) transition state & intermediate
any five points \longrightarrow 5 M.

c) sulphonation reactⁿ \longrightarrow 01 M

mechanism \longrightarrow 03 M

explanation \longrightarrow 01 M.

d) N - e - configuration - 01 M

MO. diagram \longrightarrow 03 M

~~Q-5-a~~ stability \longrightarrow 01 M.

Q-5-a) Any five points \uparrow
distinguish betⁿ Thermal & \longrightarrow 5 M.
photochemical reactⁿ

b) Octⁿ - co-ordination NO \longrightarrow 01 M.
- explanation with eg. \longrightarrow 1 $\frac{1}{2}$ M.

Defⁿ - Ligand \longrightarrow 01 M.

explanation with
diff. types, examples. \longrightarrow 1 $\frac{1}{2}$ M.

Q-5-c - Any five applications — 5 M

d - Defⁿ with eg. — 02 M

Mechanism & applⁿ — 03 M

Q-6 - a) Defⁿ of carbene — 1 M

Comparison (any five points)

with str. & bond angle — 04 M

b) Octet rule — 01 M

Exceptions with examples — 04 M

c) Observations of Werner's Theory — 02 M

Application in Co(III) Ammine — 03 M

d) Defⁿ - Wohl-Ziegler reacⁿ — 02 M
with eg.

Mechanism with explanation — 03 M

