

PART-C

Answer **any five** of the following questions. **Each** question carries **3**

marks:

[5×3=15]

25) In the extraction of Aluminium metal by Hall-Heroult process.

- a) Write overall cell reaction.
- b) What is the role of Na^3AlF_6 ?
- c) On which electrode aluminium metal deposits

26) With reaction condition, write the balanced chemical equations for the manufacture of nitric acid by Ostwald's process.

27) Complete the following equations:

- a) $\text{CaO} + \text{H}_2\text{O} >$
- b) $\text{SO}_2 + \text{H}_2\text{O} >$
- c) $\text{Na}_2\text{SO}_3 + \text{H}_2\text{O} + \text{SO}_2 >$

28) a) How is chlorine prepared in laboratory using KMnO_4 ? (2)

b) why chlorine water on standing has a yellow colour? (1)

29) a) Calculate spin only magnetic moment of ferric ion.

[Given Atomic number of iron is 26]

b) Between Sc^{+3} and Cu^{+2} ion, which is colourless?

30) write the balanced chemical equations in the manufacture of $\text{K}_2\text{Cr}_2\text{O}_7$ from chromite ore.

31) What is the Lathanoid contraction? Mention any two Consequences of it.

32) Draw cis-isomer and trans-isomer of $[\text{Co}(\text{en})_2\text{Cl}_2]$ complex.
What is the co-ordination number of cobalt metal in the Complex?

33) Using valence bond theory [VBT]. Explain geometry, hybridisation and magnetic property of $[\text{CoF}_6]^{-3}$ ion.
[Atomic number of Cobalt is 27]

34) a) what is heteroleptic complexes? Give an example.

b) if $\Delta^o < P$, on the basis of Crytal Field Theory [CFT], write the electronic configuration of d^4 -ion in octahedral complexes.