

DOON UNIVERSITY, DEHRADUN

Mid Semester Examination, 6th Semester, 2018

Academic Year 2017-18 (Even Semester)

School of Physical Sciences (SoPS) Department name: Chemistry

Programme Name: Integrated M.Sc. 5 Years (Chemistry)

Course Title: Inorganic Chemistry- IV Course Code: CYC-351

Maximum Marks: 30 Time Allowed 2.00 Hours Note: Attempt All Questions from Sections A, B and C. (All terms have their usual meaning) (Marks: 6) SECTION: A 1a. Which of the following steps is NOT part of qualitative analysis? [1] (c) Melting point test (a) Cation tests (d) Solubility (b) Heat tests 1b. Which of the following is the confirmatory test for lead? [1] (a) Adding concentrated ammonia (15 M) and observing that lead chloride dissolves (b) Adding cobalt nitrate and observing a yellow precipitate of lead nitrate (c) Adding potassium chromate and observing a yellow precipitate of lead chromate (d) Adding HCl and observing a precipitate of lead chloride 2a. Which of the following is used to test nitrate ions? [1] (a) Iron (II) sulphate solution and sulfuric acid (b) Hydrochloric acid and barium chloride solution (c) Nitric acid and silver nitrate solution (d) Sodium hydroxide solution 2b. Which of the following reagent is used to test ammonium ion? [1] (a) Potassium hexacyanoferrate(II) solution (b) Potassium thiocyanate solution (c) Potassium iodide solution (d) Nessler reagent 3a. What reagent can be used to differentiate hydrochloric acid and sulphuric acid? [1] (a) Silver nitrate solution (c) Sodium hydroxide solution (b) Sodium carbonate solution (d) Ammonia solution 3b. What is the observation when potassium iodide solution is added to a lead (II) nitrate solution? [1]

SECTION: B (Marks: 12) 4. How would you separate a mixture of PbCl₂ and Hg₂Cl₂? Give their confirmatory tests as well. [3] 5. What is Soda extract? Why and how is it prepared? [3] 6. Explain: [3] a) Chromyl chloride test b) Brown ring test c) Borax bead test 7. Give a brief description of qualitative analysis of cationic radicals along with group members and group reagents. [3] SECTION: C (Marks: 12) 6. What are the theoretical principles involved in qualitative analysis? [4] 7. Give a flow diagram of qualitative analysis of Group IV cationic radicals.

8. What are interfering radicals? Why and how are they removed?

(c) A white precipitate is formed

[4]

[4]

(d) Effervescence is observed

(a) No changes

(b) A yellow precipitate is formed