

Faculty of Science
Subject: Chemistry
Semester –I
QUESTION BANK

Time : 3hours

Max. Marks: 50

I. Write brief procedure along with group separation table for the identification of cations in the following mixture.(6)

1. Bi^{+3} , Al^{+3}
2. Cd^{+2} , Ca^{+2}
3. Ag^{+} , NH_4^{+}
4. Cu^{+2} , Zn^{+2}
5. Ni^{+2} , Ba^{+2}
6. K^{+} , Zn^{+2}
7. Cr^{+2} , Sr^{+2}
8. Hg_2^{+2} , NH_4^{+}
9. Cd^{+2} , Al^{+3}
10. Sn^{+2} , Mg^{+2}
11. Sb^{+3} , Ca^{+2}
12. Hg^{+2} , NH_4^{+}
13. Fe^{+3} , Mg^{+2}

II. (a) Analyze the given mixture using semi-micro qualitative technique systematically and report only TWO CATIONS present in it. (24)

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|--|--|---|
| 1. $(\text{NH}_4)_3\text{PO}_4 + \text{Cd}(\text{Ac})_2$ | 2. $\text{Al}_2(\text{SO}_4)_3 + \text{ZnCl}_2$ | 3. $\text{AlCl}_3 + \text{Ba}(\text{NO}_3)_2$ |
| 4. $\text{AlCl}_3 + \text{Ca}(\text{NO}_3)_2$ | 5. $\text{AlCl}_3 + \text{Sr}(\text{NO}_3)_2$ | 6. $\text{CaCO}_3 + \text{Mg}(\text{NO}_3)_2$ |
| 7. $\text{Sr}(\text{NO}_3)_2 + \text{MgCO}_3$ | 8. $\text{Sr}(\text{NO}_3)_2 + \text{Cd}(\text{Ac})_2$ | 9. $\text{MgSO}_4 + \text{NH}_4\text{I}$ |
| 10. $\text{FeSO}_4 + \text{NH}_4\text{Cl}$ | 11. $\text{Pb}(\text{NO}_3)_2 + \text{NH}_4\text{Ac}$ | 12. $\text{Bi}(\text{NO}_3)_3 + (\text{NH}_4)_3\text{PO}_4$ |
| 13. $\text{ZnCl}_2 + \text{Ba}(\text{Ac})_2$ | 14. $\text{Sr}(\text{NO}_3)_2 + \text{NH}_4\text{Cl}$ | 15. $\text{CaCO}_3 + \text{NH}_4\text{Br}$ |
| 16. $\text{Ba}(\text{NO}_3)_2 + \text{MgI}_2$ | 17. $\text{BaCO}_3 + \text{NH}_4\text{Ac}$ | 18. $\text{MgSO}_4 + \text{NH}_4\text{Br}$ |
| 19. $\text{CdCl}_2 + (\text{NH}_4)_3\text{PO}_4$ | 20. $\text{Pb}(\text{Ac})_2 + \text{NH}_4\text{NO}_3$ | 21. $\text{CaCO}_3 + \text{NH}_4\text{Cl}$ |
| 22. $\text{MgSO}_4 + (\text{NH}_4)_2\text{CO}_3$ | 23. $\text{ZnCl}_2 + \text{NH}_4\text{Ac}$ | 24. $\text{Al}_2(\text{SO}_4)_3 + (\text{NH}_4)_2\text{CO}_3$ |
| 25. $\text{Ba}(\text{NO}_3)_2 + \text{NH}_4\text{Ac}$ | | |

(b) Following the given procedure, prepare a crude sample of one of the following inorganic compounds. (10)

1. Tetrammine copper(II)sulphate
2. Potash Alum. $\text{KAl}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$
3. Bis (dimethy glyoximato) nickel(II)

Scheme of Evaluation

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|------|---|---|-------------|
| I. | 1. Procedure | - | 6marks |
| II. | (a)1. Solubility | - | 3marks |
| | 2. Flame test | - | 3marks |
| | 3. Two Cations | - | 8x2=16marks |
| | (Identification and Confirmation) | | |
| | 4. Report of cations in the given mixture | - | 2marks |
| | (b) Preparation inorganic compounds | - | 10marks |
| III. | Record | - | 5marks |
| IV. | Viva | - | 5marks |