

ACTIVITY CODE: 1903026031

B.Sc. 6th Semester (Honours) Practical Examinations, October 2020

Subject: Chemistry

Course ID: 61421

Course Code: UG/CHEM/601/C-13 (P13)

Course Title: Inorganic Chemistry V

Full Marks: 10

Time: 1 Hours 30 Minutes

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as possible

1. Answer *any one* questions: 10×1 = 10

- (a) (i) Which acid is essential for flame test and why? How can you distinguish Ca^{2+} salt from Sr^{2+} salt with the help of flame test?
- (ii) Give the formula of the reagents borax and microcosmic salt. How can you differentiate between boric acid and borate salt in a supplied sample? Give equations.
- (iii) How can you differentiate between a ferrocyanide salt and ferricyanide salt with the help of silver nitrate solution? Give balanced equations.
- (iv) Write down the balanced equation of the reaction between disodium hydrogen phosphate and ammonium molybdate in presence of excess HNO_3 acid. What is the colour of the main precipitate? What is its name?

$$(1+1)+(1+1+1)+2+(1+1+1) = 10$$

- (b) (i) What are the colours of the salts- CdS , ZnS , SnS_2 and Sb_2S_3 ? In systematic group analysis both Cu^{2+} and Zn^{2+} precipitate as sulphides, yet Cu^{2+} is detected in Group IIA while Zn^{2+} is detected in Group IIIB - Explain.
- (ii) Write down the reaction of nickel salt with DMG in alkaline medium.
- (iii) What happens when copper nitrate solution is treated with potassium ferrocyanide solution? Write down the relevant reaction.
- (iv) Describe briefly the procedure of fluorescence test for tin.
- (v) Why is Na_2CO_3 extract used for detection of acid radicals?

$$(2+2)+1+(1+1)+2+1 = 10$$

- (c) (i) What happens when NaCl and $\text{K}_2\text{Cr}_2\text{O}_7$ are added to a few drops of conc. H_2SO_4 and heated in a dry test tube? Write down the relevant reaction.
- (ii) Write down the reaction when sodium sulphide solution is treated with sodium nitroprusside solution and what is the colour of the product?
- (iii) Write down the relevant reactions for the borax bead test of a copper salt in oxidizing and reducing flame. Mention the colour of the products.

- (iv) Briefly outline the procedure of the test of iodate and iodide in their mixture. On what principles systematic group analysis are based upon?
- (v) AgCl is insoluble in HNO₃ but dissolves in NH₄OH – why?
- (vi) How can you detect the insoluble salt PbSO₄? $1+1+2+(2+1)+1+2 = 10$