NEW

Part II 3-Tier

2015

CHEMISTRY

(Honours)

PAPER—V

(PRACTICAL)

Full Marks : 150

Time : 2×6 Hours

The figures in the right-hand margin indicate full marks.

Group—A

(*Inorganic*)

Time : 6 Hours (One day)

[Marks : 70]

1. Detect four radicals excluding Carbonate $CO_3^{=}$ radical in the supplied inorganic sample (Marked as 'I') and suggest the probable composition of the supplied sample with proper *reasons* :

   (a) Dry tests for presence of radicals. (*Give positive tests only*) 10

   (b) Wet tests for the presence of radicals including the preparation of the solution, removal of interfering acid radicals (avoid detail procedure), treatment of insoluble portion (if present), with systematic approach. 20

(c) Confirmatory tests of detected radicals. 4

(d) Mention the name and notation of the detected radicals with proper charges. 2

(e) Logical establishment of probable composition of the supplied sample. 4

2. Viva-Voce. 15

3. Laboratory Note Book. 15

Group—B

(*Organic*)

Time : 6 Hours (One Day)

[Marks : 80]

1. Make a systematic and complete analysis of the organic compound supplied in the container marked 'O' accordingly :

(a) Determine the solubility of the compound and predict the type of functional group(s) that may be present in the compound. 2

(b) Perform chemical tests to confirm the presence / absence of the special elements : N, S, Cl, Br, I. Record your analysis concisely in tabular form providing conclusion at the end. 8

(c) Perform chemical tests to show the presence / absence of the following functional groups (10) in the sample : — COOH, Phenolic — OH, Carbonyl (Keto, — CHO), — COOR (ester), aromatic — NH_2, — CONHAr (anilido), — $CONH_2$ (amido), C = C (olefinic unsaturation). 20

N.B. : It is mandatory to record own observation regarding each chemical test performed.

(d) Give one confirmatory test of each functional group present in your sample. 3

(e) Take Melting Point of your sample and report it to the examiners. Melting Point is to be countersigned by the examiners.

N.B. : If the sample does not melt upto 200°C, do not proceed further. Report Melting Point above 200°C. 3

(f) Prepare and submit one appropriate solid derivative of the sample and write the procedure also. 4

2. Chemically identify the single organic compound given in the container marked 'S' by the following way :

(a) Check the physical characteristics, solubility and action towards litmus paper, and classify your sample into a group with proper reasoning. 4

(b) Systematic analysis (including common tests, confirmatory tests for present compound and absent compounds in that group. 6

(c) Write two confirmatory tests for the given compound in systematic analysis. 3

(d) Correct conclusion with name and structural formula of the identified single compound. 2

3. Prepare the organic compound as per the direction given below :

Record the yield of the crude product. Take the melting point of the recrystallized product. Submit both the crude and recrystallised products. Yield of the product and Melting Point are to countersigned by the examiner.

Method of Preparation :

Ground thoroughly compound A with B in a dry mortar with the help of a pestle to make a easy flowing powder. Transfer this material into a 150 m*l*. dry conical flask fitted with a piece of cotton at its mouth and heat the content of the flask on a boiling water-bath for about 30 minutes. Cool the reaction mixture to room temperature and then dissolve it in minimum amount of water by shaking well. Filter the resulting solution and acidify it with Conc. HC*l* with thoroughly cooling in ice. Filter the white precipitate, thus obtained, and wash with cold water to remove HC*l*, and then dry. Recrystalize 500 mg. of the crude product from hot water.

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