

OLD

Part II 3-Tier

2016

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 CO_3^{2-} and O^{2-} radicals of any in the supplied inorganic sample (Marked as 'I') and suggest the most probable composition of the supplied sample with proper justification :

(a) Note physical characteristics and solubility of sample.

2

(Turn Over)

- (b) Dry tests for the presence of radicals.
(Report positive tests only) 10
- (c) Wet tests for the presence of radicals including the preparation of the solutions, removal of interfering acid radicals (avoid detail procedure), treatment of insoluble part (if present) with systematic approach.
(Report only positive tests for acid radicals, and group separation and analysis of the group(s) present for basic radicals in tabular form including preparation of solutions.) 18
- (d) Confirmatory tests of detected radicals. 4
- (e) Mention the name and notation of the detected radicals with proper changes. 2
- (f) Logical establishment of the most probable composition of the supplied sample. 4
2. Laboratory Note Book. 15
3. Viva-Voce. 15

Group—B

(Organic)

Time : 6 Hours (One Day)

[Marks : 80]

1. Carry out the systematic analysis of the supplied organic compound marked 'O' accordingly.
- (a) Determine the solubility of the supplied organic

compound with preliminary conclusion : (H₂O, 5% HCl, 5% NaOH, 5% NaHCO₃, Conc. H₂SO₄).

2

(b) Detect either the presence or absence of the following special elements : (N, S, Cl, Br, and I) 8

(c) Detect either the presence or absence of the following functional groups in the given sample : 16

— COOH, Phenolic — OH, Carbonyl (aldehyde and Keto), — CO₂R (ester), aromatic — NH₂, aromatic — NO₂, — CONH₂ (amido), — CONHAr (anilido), and

$\text{>C} = \text{C}<$ (olefinic unsaturation).

(d) Confirmation of functional groups by Confirmatory tests. 3

(e) Determine the melting point of the organic sample. 3

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

(f) Prepare and submit one appropriate solid derivative of the supplied sample. short description of the method. 8

2. Identify the supplied pure single organic compound marked 'S' by eliminating others from :

(a) 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). 6
- (c) Write two confirmatory tests for the given sample. 3
- (d) Correct conclusion with name and structural formula of the identified compound. 2
3. Carry out the organic preparation as per the direction given below : 25

Compound A with B (supplied) are mixed thoroughly and taken in a 500 ml long necked flask with a cotton stoppered funnel at its mouth. The flask is heated at 130°-135°C on an asbestos centred wire-gauze until the mass suddenly froths up and turn almost solid. The flame is removed and the mixture is allowed to cool. The solid is disintegrated in the flask by addition of 10-20 ml of water. The solid is filtered under Suction, washed with little water and dried in an oven at 100°C. Recrystallize 500 mg of the crude product from alcohol. Record the yield of the crude product. Take the melting point of the recrystallized product. Submit both the crude and recrystallized products. Yield of the product and Melting point are to be countersigned by the examiner.
