NEW

Part II 3-Tier

2018

CHEMISTRY

(Honours)

PAPER—V

(PRACTICAL)

Full Marks : 150

Time : 3×6 Hours

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

Group—A

(*Organic*)

Time : 6 Hours (One Day)

[Marks : 50]

A. Identification of supplied single solid organic compound marked 'O' accordingly.

(a) Physical characteristics. 1

(b) Solubility test with preliminary conclusion. (H_2O, 5% HCl, 5% NaOH, 5% $NaHCO_3$, Conc. H_2SO_4). 3

(c) Detection of special elements (N, S and Cl) in the given solid sample. 6

(d) Detection of the following functional groups in the given solid sample.

Carboxylic acid, Phenolic–OH, Carbonyl (Keto, aldehyde), Unsaturation, aromatic nitro, aromatic amino, amido. 16

(e) Confirmation of functional groups by confirmatory tests. 1

(f) Determination of melting point of the organic sample. 3

(g) Prepare and submit one appropriate solid derivative of the supplied sample with short description of the method. 4

(h) Determination of melting point of the derivative. 3

(i) Literature Survey. 2

(j) Naming of the organic compared with structure. 1

B. Laboratory Note Book. 5

C. Viva-Voce. 5

N.B. : It is mandatory to record all the observations. Melting points are to be shown and signed by the examiner.

Group—B

(*Inorganic*)

Time : 6 Hours (One day)

[Marks : 50]

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

(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 interfaring 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. 5

3. Viva-Voce. 5

Group—C

(*Physical Chemistry*)

Time : 6 Hours (One day)

[Marks : 50]

1. Perform one physical chemistry experiment from the following list of experiments allotted through a single drawn lottery. 40

   (a) Determine surface tension of the given solution by drop counting method and hence determine its concentration.

   (b) Determine coefficient of viscosity of the given solution by using Ostwald Viscometer and hence determine its concentration.

   (c) Determine partition co-efficient of iodine between water and the supplied organic solvent.

   (d) Determine pH of the given buffer solution by colour matching method.

   (e) Determine the ratio of rate constant of the decomposition of H_2O_2 using two supplied $FeCl_3$ solution of different concentration.

   In each experiment marks are distributed into the following items :

   Theory, Temperature recording, Representation of data and Tabulation, Calculation, Graph plotting (if necessary) and Results.

2. Laboratory Note Book. 5

3. Viva-Voce. 5