OLD

Part-II 3-Tier

2017

CHEMISTRY

(General)

PAPER—III

(PRACTICAL)

Full Marks : 100

Time : 6 Hours

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

Unit—I

1. Make a systematic qualitative analysis of the organic compound supplied in the container marked "O".

   (i) Give the name and procedure of the experiment and detect the presence or absence of the special elements namely — nitrogen (N), sulphur (S) and halogens (Cl, Br, I) in the supplied compound. 8

(ii) Detect the presence or absence of the following functional groups :

$-COOH$, (Phenolic) $-OH$, $>C = O$ (Ketonic), $-CHO$ (Aldehyde), $-NH_2$ (Aromatic) and $-NO_2$ (Aromatic). 18

(iii) Give the confirmative test of any one of the functional groups present in the supplied compound. 2

(iv) Naming of the functional group(s) detected. 2

Unit—II

2. Carry out any *one* of the following two experiments — (*Experiment should be selected by lottery*) :

(a) Detect any *three* radicals (acid/base/interfering acid) in the supplied inorganic sample marked "I".

(Ignore CO_3^{2-} radical present in the sample.)

(i) Physical properties. 3

(ii) Dry tests for acid and basic radicals (*only positive tests*). 9

(iii) Dry tests for interfering acid radicals. 9

(iv) Wet tests for acid and basic radicals (*only positive tests*). 13

(v) Confirmative tests for three radicals. 3

(vi) Correct naming of three radicals in ionic form. 3

(b) Prepare 250 ml. approx. $\left(\frac{N}{10}\right)$ standard solution of potassium dichromate by accurate weighing in an analytical balance. Mention the type of balance used for weighing.

Find out the amount of Fe^{++} in gm / litre in Mohr's salt solution supplied in the bottle marked "V" :

(i) Weighing in chemical balance. 6+1

(ii) Volumetric results upto four decimal places.

33

Unit—III

4. Laboratory Note Book. 10

Unit—IV

5. Internal performance / Attendance. 10

Unit—V

6. Viva-Voce. 10

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[Instructions to the Examiners]

1. All the Principals/TIC/Head of the Department of different Colleges are requested that before commencement of the Practical examination, a copy of the examination schedule with the names of internal and external examiners should be sent to the Head Examiner for his record.

2. Examiners are requested to give instructions to examinees about questions and marks distributions.

3. Each practical examination batch should consist of 20–25 examinee.

4. Key of the samples (Inorganic and Organic) with full signatures of both examiners should be kept in a sealed cover and are to be opened jointly by the examiners after the examination of the centre is completed.

5. Examiners are requested to prepare at least four different Mohr salt solution roughly $\left(\frac{N}{10}\right)$ strength. At least 150 ml — 200 ml of the unknown Mohr salt solution to be supplied by container marked "V" to each examinee for Question No. 2 (b).

6. Care should be taken to check Examiner's signature in the examined scripts and award list.

7. Examiners are directed to set up atleast 25% Quantitative / Qualitative Experiments (Question No. 2) in a batch of examinees.

8. Data for three titrations should be properly tabulated by the candidate and should be signed by the examiner.

Titre values differing by more than 0.2 m*l* should not be accepted.

9. Examiners requested to send the examined scripts along with keys, award-lists, distribution-record and top-sheets showing the candidates presence and absence, to the H.E. positively within 15 days after the examination of the centre is over.

The adress to which the above documents are to be sent is as follows :

Dr. Bidhan Chandra Samanta
Department of Chemistry
Mugberia Gangadhar Mahavidyalaya
Bhupatinagar, Purba Medinipur
Pin – 721425
Phone : 03220-270236 / 9732752907

Evaluation of answer scripts :

1. (i) Name of the experiment and procedure. 2

Detection of elements (N, S, C*l*, Br, I) :

— Presence or absence. 6

(ii) Marks to be awarded separately for each functional groups. Award no credit for wrong detection of functional groups. 3×6

(iii) Confirmative test can be shown during the course of detection or separately. 2

(iv) Naming with formula of the functional group / group(s) detected. 2

2. (a) (i) Physical properties — State, colour and solubility. 3

(ii) Dry tests for acid and basic radicals (only positive test). 9

(iii) Dry test for absence or presence of Interferring acid radicals. 9

(iv) Solution preparation for acid and basic radicals. 2+2

Wet tests (only positive tests) for acid and basic radicals. 9

(v) Confirmative test can be shown during the course of analysis or separately. 1+1+1

(vi) Correct naming of three radicals in ionic form. 1+1+1

(b) (i) Weighing upto decimal mark (1·225 ± 0·1000) and name of the balance used. 6+1

(ii) Estimation of Fe^{++} ion in unknown Mohr salt solution of container marked "V" :

Table showing titration reading. 5

Results : Calculation upto four decimal places :

Error upto	1%	28
"	> 1% and upto 2%	25
"	> 2% and upto 3%	20
"	> 3% and upto 4%	15
"	> 4% and upto 5%	10
"	> 5% and upto 6%	08
"	> 6%	00

[Direction for Inorganic and Organic Sample Preparation]

A. List of samples for detection of Organic Qualitative Analysis (*Question No. 1*) :

1. Benzoic acid
2. Oxalic acid
3. Cinnamic acid
4. Resorcinol
5. Benzophenone
6. Vaniline
7. Benzil
8. β-Naphthol
9. p-Hydroxy benzoic acid
10. m-nitroaniline
11. m-dinitrobenzene
12. Salicyclic acid

13. Anthranilic acid

14. Aniline hydrochloride

15. Sulphanilic acid

16. p-Tolludine

17. p-amino benzoic acid

18. 2-chloro benzoic acid

B. List of Samples for detection of Inorganic Qualitative Analysis (*Question No. 2a*) :

1. Ammonium sulphate + Boric acid

2. Zinc phosphate + Zinc sulphate

3. Nickel borate + Nickel sulphate

4. Zinc sulphide + Zinc phosphate

5. Sodium chloride + Boric acid

6. Sodium sulphate + Sodium sulphide

7. Potassium nitrate + Potassium bromide

8. Potassium chloride + Potassium nitrate

9. Potassium chloride + Potassium bromide

10. Sodium nitrate + Sodium chloride

11. Calcium chloride + Boric acid

12. Copper borate + Copper chloride

13. Copper nitrate + Copper borate

14. Nickel sulphide + Boric acid

15. Ferric chloride + Boric acid

16. Ferric phosphate + Ferric chloride

17. Ammonium chloride + Boric acid

18. Potassium nitrate + Potassium chromate