

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

B.Sc. First Year

Analytical chemistry Paper III
(Laboratory course –I)

Time 4 Hours

Max Marks 100

- Q 1 Calibration of weights and calculation of errors in it. **15 marks**
OR
Calibration of burette, pipettes and standard flask.
- Q 2 Prepare a standard solution of Na_2CO_3 and standardize the given solution of $\text{HCl}/\text{H}_2\text{SO}_4$ **25 Marks**
OR
Prepare a standard solution of sodium oxalate and standardize given solution of KMnO_4
OR
Prepare a standard solution of NaCl and standardize given solution of AgNO_3
OR
Assay of $\text{FeSO}_4 \cdot 7 \text{H}_2\text{O}$
OR
Assay of boric acid titrimetrically
OR
Determine percentage purity of commercial sample of NaOH
- Q 3 Prepare a standard solution of $\text{K}_2\text{Cr}_2\text{O}_7$ and standardize given solution of $\text{Na}_2\text{S}_2\text{O}_3$ **25 marks**
OR
Estimation of Barium as BaSO_4 gravimetrically
OR
Estimation of iron as Fe_2O_3
OR
Preparation of 0.1 N solution of HCl/HNO_3 using density and percentage by weight and their standardization by using Na_2SO_3
OR
You are provided with 0.1 N solution of acetic acid prepare 50 mL 0.02N acetic acid and its standardization.
OR
You are provided with 0.1 N FAS prepare 50 mL of FAS (II) suitable dilution and standardize against KMnO_4

Q 4 Prepare a calibration curve using KMnO_4 and determine concentration in unknown given sample solution. **25 marks**

OR

Prepare a calibration curve using CuSO_4 solution and determine concentration of CuSO_4 in given solution

OR

Preparation of 0.05 N H_2SO_4 using density and weight percentage and its standardization.

OR

Prepare 100 ppm K solution using K_2SO_4

OR

Prepare 100 ppm Fe Solution using FAS

OR

Visit to chemical industry/ research institute

Q 5 Viva **5 Marks**
Record book **5 Marks**

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Analytical chemistry Paper IV
(Laboratory course –II)

Time 4 Hours

Max Marks 100

- Q 1 Calibration of colorimeter/ spectrophotometer
OR
Colorimetric estimation of chromium
OR
Measure the optical density of series of solution of KMnO_4 and find the equation of line using least square method.
OR
Prepare 0.1N NaCl solution and standardize AgNO_3 by Mohr's method
OR
Estimate the total amount of halide present in the given solution using Volhard's method.
- Q 2 Separation of amino acids by thin layer chromatography
OR
Separation of metal ions by thin layer chromatography.
OR
Determination of R_f value of cations / amino acids using paper chromatography.
OR
To determine the molar absorptivity of Fe 5-sulphosalicylic acid
OR
Estimation of Na/K by using flame photometer.
OR
Isolation of nicotine from tobacco leaves.
OR
Estimation of purity of given azo dye by colorimetry.
- Q 3 Estimation of calcium from chalk
OR
Determine the percentage composition of a mixture of sodium oxalate and oxalic acid
OR
Estimate the amount of tannic acid present in various sample of tea leaves.
OR
Analysis of the given sample of antacid using standard HCl and NaOH solutions
OR
Estimate the amount of Na_2CO_3 and NaOH in the given mixture titrimetrically.
OR

Estimate the amount of Na_2CO_3 and NaHCO_3 in the given mixture titrimetrically.

OR

Estimate the amount of $\text{H}_2\text{C}_2\text{O}_4$ and H_2SO_4 in the given mixture titrimetrically.

Q 4 Viva
Record

5 Marks

5 Marks

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B.Sc. Second Year

Analytical chemistry
Paper VII

Time 4 Hours
100

Max Marks

Note:

1. Use of log table / calculator is allowed
2. Candidates can use printed chart/ Printed book.
3. Advantage will be given to neat and clean work.
4. Obtain the signature of examiner for titration/weight/ other measurements /readings

**Perform one experiment each from question no 1 to 3 as allotted
by the examiner**

Q 1 a. Estimation of copper iodometrically 30

Marks

- b. Estimation of hydrazine iodometrically
- c. Estimation of nitrite using KMnO_4
- d. Estimation of persulphate using KMnO_4
- e. Estimation of iron using KMnO_4
- f. Estimation of copper using $\text{Ce}(\text{SO}_4)_2$

Q 2 A] Determination of hardness of water by EDTA 30

Marks

- B] Estimation of percentage purity of given sample of KNO_2 / NaNO_2
- C] Estimation of Pb^{2+} and Sn^{2+} by EDTA
- D] Determination of iron as 8-hydroxy quinolate by solvent extraction method
- E] Separation of nickel and cobalt using ion exchange column
- F] Separation of zinc and magnesium using ion exchange column

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B.Sc. Second Year

Analytical chemistry
Paper VIII

Time 4 Hours

Max Marks 100

Note:

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2. Candidates can use printed chart/ Printed book.
3. Advantage will be given to neat and clean work.
4. Obtain the signature of examiner for titration/weight/ other measurements/ Readings

**Perform one experiment each from question no 1 to 3 as allotted
by the examiner**

Q1 A] Turbidimetric determination of traces of Sulphate 30

Marks

B] Assay of boric acid conductometrically

C] Conductometric titration of H_2SO_4 , CuSO_4 & CH_3COOH against NaOH

D] Estimation of Fe^{2+} against $\text{K}_2\text{Cr}_2\text{O}_7$ by conductometry

E] To determine composition of two liquids by refractive index measurements

F] Estimation of cadmium by polarography using standard deviation method

G] Analysis of mixture of two cations by polarography

Q. 2 A] Determination of percentage purity of phosphoric acid by 30

Marks

potentiometrically

B] Estimation of chloride iodide in the given mixture potentiometrically

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B.Sc. Third Year

Analytical chemistry
Paper XI

Time 4 Hours

Max Marks 100

Note:

1. Use of log table / calculator is allowed
2. Candidates can use printed chart/ Printed book.
3. Advantage will be given to neat and clean work.
4. Obtain the signature of examiner for titration/weight/ other measurement/ readings

**Perform one experiment each from question no 1 to 3 as allotted
by the examiner**

Q1 A] Determination chlorpromazine hydrochloride 30

Marks

- B] Determination of Phenobarbitone
- C] Determination of Ascorbic acid
- D] Colorimetric estimation of rifampicin
- E] Assay of aspirin
- F] Assay of isoniazid
- G] Assay of Ephedrine hydrochloride
- H] Estimation of phosphorous in fertilizer
- I] Determination of Calcium in cement sample (titrimetry)

Q2 A] Estimation of calcium and magnesium in dolomite ore 30

Marks

- B] Determination of total MnO_2 in manganese ore
- C] Determination of physical parameters of waste water (Colour, pH conductivity and Oxidation reduction potential)
- D] Determination of dissolved oxygen in given water sample.
- E] Estimation of chlorides presents in water (Mohr's/ adsorption indicator)

- F] Estimation of Specific gravity and total solids present in milk samples.
- G] Estimation of lactose content of milk,
- H] Determination of glucose present in honey
- I] Estimation of phosphoric acid present in soft drink,

Q. 3 Project related with analytical chemistry 30

Marks

(literature survey, experimentation, Results, discussion/ understanding of the subject/ skill developed and presentation/ documentation of project]

Q. 4 Record and viva-voce 10

Marks

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B.Sc. Third Year

Analytical chemistry
Paper XII

Time 4 Hours

Max Marks 100

Note:

1. Use of log table / calculator is allowed
2. Candidates can use printed chart/ Printed book.
3. Advantage will be given to neat and clean work.
4. Obtain the signature of examiner for titration/weight/ other measurement/ readings

**Perform one experiment each from question no 1 to 3 as allotted
by the examiner**

Q1 A] Estimation of Na, and K by flame photometer in the given sample.

30

Marks

- B] Estimation of Na, and K in blood serum by flame photometer
- C] Analysis of water for its COD
- D] Colorimetric estimation of traces of nitrogen in the sample of water using Nessler's reagent.
- E] Estimation of chromium colorimetrically in stainless steel.
- F] Analysis of gunmetal
- G] Estimation of aluminum in bauxite gravimetrically

Q 2 A] Estimation of protein by Biuret reagent colorimetrically

30

Marks

- B] Fluorometric estimation of thiamine hydrochloride and quinine sulphate
- C] Assay of peppermint oil for total esters

- D] Assay of benzaldehyde in bitter almond oil.
- E] Colorimetric estimation of amino-acid
- F] Determination of blood sugar by Follin Wu method.
- G] Estimation of cholesterol in egg/oil
- H] Determination of glucose in honey by Wilstatter's method
- I] Analysis of Tea and coffee,
- J] Determination of refractive index of the edible oil /solvents and to determine percentage purity

Q 3 A] Determination of dissolved oxygen in water by Winkler's method.

30

Marks

- B] Colony characteristics and growth patterns of different micro-organism
- C] Isolation of bacterial used streak plate method using water sample or food sample.
- D] Estimation of Iron in Iron ore gravimetrically.
- E] Estimation of micro-nutrients Sn, Cu, Mn in soil
- F] Estimation of nitrite and phosphate in water by colorimeter.
- G] Analysis of solder for its Pb and Sn content

Q 4 Racord and Viva-voce

10

Marks

