

Rayat Shikshan Sanstha's  
**Yashavantrao Chavan Institute of Science (Autonomous), Satara.**  
**Advanced Diploma Course, Practical Examination May - 2022**  
**Department of Chemistry**  
**M.Sc. Part-II (Sem-IV)**  
**Question Bank**  
**Analytical Chemistry (MCT-401)**

**Q.1) One Sentence Questions:**

- 1) What is Poison?
- 2) Write any two Functions of RBCs.
- 3) Give the any two function of vitamins.
- 4) Which method and reagent used in estimation of Malathion?
- 5) Define Erythropoiesis ?
- 6) Define the term Sampling.
- 7) Write constituents of plasma?
- 8) Name the method/ Instrument which could be used for analysis of pesticides.
- 9) Enlist any four examples of Physical Evidence.
- 10) Give any two function of lipids?
- 11) What is full form of AFIS ?
- 12) Define the term Vitamin.
- 13) \_\_\_\_\_is a small compartment that represents all those body fluids which are formed from the transport activities of cells.
- 14) Write the types of carbohydrates.
- 15) Give any two uses of pesticides.
- 16) Define Forensic Science.
- 17) Write any two function of protein.

- 18) What is lipids with given suitable example?
- 19) What is carbohydrates with given suitable example?
- 20) Write the types of Vitamin.
- 21) What is creatinine?
- 22) Enlist the type of cholesterol present in human body.
- 23) Give the name of any organo phosphorus pesticides
- 24) What do you mean by lethal dose?
- 25) State the role of vitamin C in human blood.
- 26) Write the structure of DDT.
- 27) Write any two names of organosulphur and organophosphorous pesticides.
- 28) Write any two Clinical importance of cholesterol.
- 29) State the role of chloride ions in physiological processes.
- 30) State any two difference between oil and fat.

**Q.2) Long Question.**

- 1) Discuss the analysis of Chloridane with any suitable method with its advantages.
- 2) Explain the method for analysis of saponification value.
- 3) Explain in detail Organophosphate poisoning?
- 4) Explain the sampling technique used in forensic analysis.
- 5) Explain the method for analysis of thiram.
- 6) Discuss the analysis of protein by kjeldhal method.
- 7) Explain estimation of serum calcium?
- 8) What is Pesticide? Explain in brief classification of pesticides.
- 9) Explain in detail Cyanide Poisoning ?
- 10) Explain in brief analysis of gammexane.
- 11) Define the term Protein? Discuss the analysis of Protein by Lowry method.

- 12) Explain in brief composition of blood ?
- 13) Discuss the analysis of Chloridane with any suitable method with its advantages.
- 14) Explain the method for analysis of saponification value.
- 15) Explain in detail Organophosphate poisoning?
- 16) Explain the sampling technique used in forensic analysis.
- 17) Explain the method for analysis of thiram.
- 18) Discuss the analysis of protein by kjeldhal method.
- 19) Enlist the method developed for the estimation of vitamin C and describe in detail any one amongst them.
- 20) Describe clark- collip method for the estimation of calcium from blood.
- 21) Describe colorimetric used for the analysis of methyl parathion from its technical sample.
- 22) State the importance of phosphate in blood and describe a method for its estimation.
- 23) Explain the sampling and sample storage of poisons.
- 24) Write the significance of LC-50 and LD-50.
- 25) Explain the analysis method of malathion.
- 26) Describe a method for the estimation of glucose from blood.
- 27) Give any one analysis method of simazine.
- 28) Explain dissolution method of poisons.
- 29) Describe a method for the estimation of creatinine in urine.
- 30) Explain the analysis method of thiometon.

**Q.3) Short Question.**

- 1) Write a short note on lethal dose.
- 2) Explain Estimation of uric acid in serum?
- 3) Explain in brief composition of blood ?

- 4) Explain the method for analysis of Peroxide value.
- 5) Explain the classification of pesticides in brief.
- 6) Explain process of blood clotting?
- 7) Write a short note on analysis of free fatty acids.
- 8) Explain types of cellular elements ?
- 9) Write a short note on Significance of LC-50.
- 10) Explain the method for analysis of Ziram.
- 11) Explain the types of Venom.
- 12) What is an example of biological sample?
- 13) Write a short note on analysis vitamin B1?
- 14) Explain types of WBCs?
- 15) Write a short note on Sampling.
- 16) Explain in detail Antivenom.
- 17) Explain in brief Function of lipids.
- 18) Explain Estimation of uric acid in serum?
- 19) Explain Techniques for 'sample dissolution.'
- 20) Give the any one analysis method of Zinab.
- 21) Write a short note on Iodine value.
- 22) What is an example of biological sample?
- 23) Write a short note on Peroxide value.
- 24) Explain in brief classification of Pesticides.
- 25) Explain types of fingerprint.
- 26) Explain types of WBCs?
- 27) Write a short note on Vitamin B6.
- 28) Explain in brief Pesticides residue.

- 29) Explain the sampling technique used in forensic analysis.
- 30) Explain Estimation of potassium in blood?
- 31) Write the significance of LC-50.
- 32) Explain in brief advantage and disadvantages of zineb.
- 33) Write a note on composition of blood.
- 34) Discuss the colorimetric estimation of serum creatinine.
- 35) Discuss the various classes of poisons.
- 36) State the importance of creatinine in urine.
- 37) Explain in brief classification of pesticides in brief.
- 38) State the importance of phosphate in blood.
- 39) Explain the analysis of pectin by gravimetric method.
- 40) Explain the analysis of total free amino acid.
- 41) Explain the analysis of vitamin –C.
- 42) Write a note on snake venom.
- 43) Explain the analysis of starch using anthrone reagent.
- 44) Explain the analysis of total free amino acid.
- 45) Discuss the various classes of poisons.

**M.Sc. Part-II (Sem-IV) Examination,  
Analytical Chemistry  
Environmental Chemical Analysis and Control (MACT 402)  
Question Bank**

**Answer the following Questions:**

**2 Marks**

1. Define pollution. Write types of pollution.
2. Give the effects of phenol on human body.
3. Write the names of organic and inorganic constituents present in industrial waste water.
4. Which methods are used for determination of phenol in organic pollutants?
5. Give any two toxic effects of heavy metal on the human body.
6. Give examples of major components of photochemical smog.
7. What are the sources of heavy metals in the environment?
8. Write benefits of laboratory accreditation.
9. Which are the major air pollutants?
10. What are the principles of QMS?
11. Give examples of secondary pollutants.
12. Write a full form of COD and BOD.
13. What is the source of Cd pollutant?
14. Define smog. Explain photochemical smog.
15. Give the importance of laboratory accreditation.
16. Define potable water.
17. What are the sources of phenols?
18. What is the main source of phenol?
19. Which of the following industry produces the waste of phenolic?
20. What are the types of organochlorines?
21. What are the 4 types of air pollutants?
22. What is the definition and sources of air pollution?
23. What are the four types of BOD?
24. What does Chemical Oxygen Demand of COD indicate?
25. Which is certification system for laboratory accreditation?
26. What is ISO 9000 2000 quality standards?
27. What are the four types of Quality Management System Standards?
28. What are the three components of ISO 9000 2000 standard?
29. What are the three main objectives of Total Quality Management (TQM)?
30. What are three types of industrial waste?

**Answer the following Questions:**

**Marks 4**

1. Write a note on analysis of organochlorine pesticides.
2. Explain Classification of air pollutants.
3. Write a note on ISO 9000.
4. Which are the methods used to reduce air pollution?
5. What are the main methods of measuring air pollution? Explain any one method in brief.
6. Define voc. Give the example of voc.
7. What are Heavy toxic metals and explain how they affect the human body?
8. Explain major secondary pollutants sources and their effect.
9. Explain in brief analysis of Hg pollutants.
10. What are the most commonly used techniques in removing heavy metal from waste water. Explain any one briefly.
11. Explain effects of Oxides of Nitrogen.
12. What are the Heavy toxic metals and how does it affect the human body?
13. Discuss Potable and Industrial Water.
14. Give the application of ISO 9000:2000.
15. Write a note on methods of copper recovery from wastewater.
16. Give the importance of QMS in the laboratory.
17. Explain Sources of Primary Pollutants.
18. Write a note on treatment of waste water to remove heavy metal.
19. What are the major secondary pollutants and how are they formed?
20. How do secondary pollutants harm the environment?
21. Write a note on ISO 9000.
22. What are the three main types of air pollution? Explain any one.
23. Explain major secondary pollutants sources and their effect.
24. Write a note on methods of copper recovery from wastewater.
25. Write a note on biochemical oxygen demand.
26. Explain classification of air pollutants.
27. Write a note on analysis of arsenic pollutants.
28. Explain in brief Potable and Industrial Water.
29. Write a note on ISO organization.
30. Explain harmful effects of air pollution.
31. What is National Accreditation Board for Testing and Calibration Laboratories (NABL) accredited laboratory?
32. How do you remove phenol from wastewater?
33. What are the methods for determining air pollution?

34. What are the stages of process of National Accreditation Board for Testing and Calibration Laboratories (NABL) accreditation?
35. Explain why is the need of accreditation of laboratories.
36. What are the sources of air pollutants in the atmosphere?
37. What are environmental impacts of industrial waste water?
38. What are the advantages and clauses of ISO 9000 standard?
39. What is the objective of ISO 9000 family of quality management?
40. What is the role of TQM in modern business management?
41. What is the role of management in total quality management TQM implementation?
42. Which is the major source for Sulphur dioxide?
43. How is industrial wastewater generated?
44. What are 4 heavy metals that are toxic to humans. Explain Any one in brief?
45. What are some examples of biochemical oxygen demand?

**Answer the following Questions:**

**Marks 6**

1. Which are the principles of quality management?
2. Write a note on water pollution. Explain harmful effects of air pollution.
3. What are the primary pollutants and give their sources of formation?
4. Explain the method of steam gas stripping with a suitable diagram.
5. Explain in brief methods of analysis Pb and Cd pollutants.
6. Explain the method of Ion exchange for removal of phenolic waste.
7. Explain the ion exchange method for removal of phenolic waste?
8. Define air pollution. Explain Causes of Air Pollution?
9. What is dissolved oxygen? Explain Chemical oxygen demand and Biochemical oxygen demand.
10. Define terms accreditation. Give any four importance of accreditation.
11. What are the principles of quality management?
12. Explain methods of analysis of industrial waste water for organic and inorganic constituents.
13. What are the methods available for estimation of organic content in industrial wastewater?
14. Explain Primary Pollutants and their sources in brief.
15. Explain in brief method of analysis Hg.
16. Explain the method of steam gas stripping with a suitable diagram.
17. Define air pollution. Explain causes of air pollution.
18. What are the major constituents of industrial wastewater?

19. What is heavy toxic metal? Explain in Brief heavy toxic metal.
20. What are the sources of air pollutants? Explain any one .
21. What is the purpose of laboratory accreditation?
22. What is National Accreditation Board for Testing and Calibration Laboratories (NABL)& its importance?
23. What is the purpose of Total Quality Management (TQM)?
24. What are the optimal temperature and pressure conditions for a stripping column?
25. Briefly describe the types of air pollution.
26. What is Smog, and how is it created? Also, mention the types of smog.
27. What is the purpose of accreditation? What are the benefits of being accredited?
28. What are the seven principles of quality management? Explain any two.
29. What is the role of quality management?
30. What is ion exchange and how does it work?

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**Department of Chemistry**  
**M. Sc. II (Sem VI)**  
**Question Bank**  
**Applied Industrial Analysis MACT-403)**

**Q. .1Answer the following Questions: (2M)**

1. Define Paint. What is composition of paints?
2. Define food adulterant .Write structure of any two examples of food adulterant
3. What do you mean by emollient? Write any two examples of emollient?
4. What are the ingredients of food coloring?
5. Give the chemical formula of Talc
6. Define pour point.
7. Define the terms -1. Creams 2. Lotions.
8. Give the name of any four organo-Chlorine pesticides.
9. Define 1.Acid value 2. Iodine value .
10. Write a definition of preservatives in food ? Give any two examples of preservatives in food
11. What are paints ? Enlist the types of paint.
12. Give the chemical formula of Talc.
13. Give the mode of action of endosulfan.
14. Define petroleum products. Write some examples of petroleum product.
15. Define agrochemicals and give its example.
16. Define flavoring agent. Give the structure of any two Flavoring agents.
17. Give any four examples of pigments.
18. What is emulsifier? Why they are added to cosmetics
  
19. Define Herbicide and give any two examples of Herbicide?
20. Draw the structure of DDT and BHC

21. Give the difference between systematic Insecticide and Contact Insecticide.
22. Give the Ideal Characteristics of cream.
23. Which ingredients are present in lotion.
24. Give the benefits of cream and lotion.
25. Give any four application of a paints.
26. Give the elemental composition of petroleum.
27. What is Rodenticides? Give any two examples of Rodenticides
28. Give the principle of Doctor test
29. Give the examples of food Preservatives
30. Define Food Chemistry, Give basic constituents of foods

**Q. 2. Attempt the following Question (6M)**

1. Describe in brief composition of paints?
2. Define Pour point and in details pour points.
3. Explain in detail processing of additives in food and their uses.
4. What are Insecticides? Give the synthesis and mode of action of DDT.
5. Describe in brief composition of paints?
6. Explain in detail determination of titrable acidity in milk .
7. Define Pour point and explain in details pour points.
8. What is Insecticides ? Give the synthesis and mode of action of Aldrin
9. Describe in brief classification of agrochemicals?
10. what is cream ? Give the detailed classification of creams.
11. Give the various methods of food preservation.
12. How Salicylic Acid is used in cosmetic formulations? Give a brief account.
13. Define cloud point . Explain in details cloud points

14. What is herbicide? Give the synthesis and mode of action of paraquat.
15. Explain in details analysis of Milk
16. Give an account on preliminary inspection of sample in a paints
17. Explain in details composition Cream and lotion
18. How we can estimate Magnesium and calcium from face powder
19. Explain in details anti oxidant and antimicrobials in food
20. Explain in details insecticides.
21. Give the synthesis and mode of action of 2,4-dichloro phenoxy acetic acid
22. Explain in detail lead in petroleum
23. Explain in details determination of borates from a cream.
24. Explain in detail analysis of propylene glycol.
25. Explain in details uses of antibiotics in food stuff.
26. Give the synthesis and mode of action of Aldrin.
27. What are the various methods of determination of oils and fats in cosmetic products?
28. Explain in details Bomb method of determination of sulphur in petrol product
29. Explain suitable method of analysis of milk and their product
30. Define creams. Give the detailed physicochemical evaluation of creams.

**Q.3. Attempt the following Questions.**

1. Write a note on analysis of organochlorine pesticides?
2. Write short note on use of antibiotics as food additive?
3. Explain the common ingredients present in any cosmetic products.
4. Give the application of additives in paints?
5. Give the analytical method of determination of Magnesium in face powder.

6. Explain analysis of honey. Give their major components of honey.
7. Give the Bomb method of determination of sulfur in petroleum product
8. Give the composition of Calamine lotion.
9. Write a note on analysis of organochlorine pesticides?
10. Explain Common milk adulteration and their detection techniques.
11. What is lotion? How will you differentiate between creams and lotions?
  
12. Write note on Doctor's test?
13. Give the composition of Calamine lotion and write its application.
14. Give the advantages and disadvantages of agrochemicals.
15. Write short note on use of antibiotics as food?
16. Give the types of food flavors.
17. Explain in detail composition of Petroleum Products
18. Give the synthesis of Malathion.
19. Write a short note on Paraquats
  
20. Write a note on Adulterants in milk
  
21. Give the application of agro chemical compounds
  
22. Write a note on food additives
  
23. Write a note on Hair dyes
  
24. Give an account on Fungicides and Rodenticides.
  
25. Explain the analysis of flash point in petroleum products.
  
26. Explain the composition of coke.
  
27. Give the types of coal and coke.

28. Explain in detail colorific value by bomb colorimeter.
29. Give the major components of jam.
30. Give the synthesis and mode of action of Zinab.
31. Give the application of petroleum products and coal.
32. Explain analysis of honey and their major components.
33. Explain the analysis of zinc oxide from cream sample.
34. Explain the common ingredients present in any cosmetic product.
35. What are the types of food additives?
36. Write short note on use of antibiotics as food additives.
37. What is lotion? How will you differentiate between creams and lotions?
38. Give the properties of paints.
39. What are antibiotics? Give the structure and function of any one antibiotic.
40. Explain the common ingredients present in any cosmetic product.
41. Write a note on Doctor's test?
42. Give the properties of paints.
43. Give the detailed classification of creams.
44. Explain the classification of food color's as additives.
45. Give the application pesticides and insecticides .

**M.Sc. Part-II (Sem-IV) Examination,  
Analytical Chemistry  
Quality Assurance and Quality Control (MACT 404)  
Question Paper**

**Answer the following Questions**

**Mark 2**

1. Define validation Method of analysis.
2. Write definition of sampling.
3. What is Quality Assurance?
4. Explain purpose of documents and record control.
5. What is mass balance?
6. Define probability sampling methods.
7. Give the names of reagents used in oxidative coupling and oxidation reaction.
8. What is the capacity factor?
9. What are the types of quality analysis?
10. What is Judgmental sampling? Give two examples of it.
11. Which are the Characteristics shown by the chemical compound used to create HPLC separation?
12. Define Probability sampling methods and non-probability sampling methods.
13. What is sampling? Give any example of quota sampling.
14. Define mass balance?
15. Write names of reagents using diazo coupling reaction and Condensation reaction.
16. Explain the term quality assurance.
17. Write the three sections of manuals.
18. What are the types of quality?
19. What are the 2 types of quality control?
20. Which type of tool is quality assurance?
21. How can I improve my QA skills?
22. What are the elements of Quality Management System?
23. Who is in charge of quality assurance?
24. What are the elements of ISO 9001?
25. What are quality management system (QMS) processes?

**Answer the following Questions**

**Mark 4**

1. Give the difference between quality control and quality assurance.
2. Illustrate with example how will you decide type of sampling.
3. Write a short note on quantitation limit.
4. Write Short note on software and hardware.
5. What are the responsibilities of the Quality Assurance department?
6. Write Short note on quality control data.

7. Write difference between Probability Sampling Method and Non-Probability Sampling Method.
8. What are the advantages of instrument calibration and maintenance?
9. Write Short note on ICH guidelines.
10. Write a short note on Quantitation limit.
11. Explain good laboratory practices and personnel.
12. Write a short note on quality control.
13. Write a difference between Probability Sampling Method and Non-Probability Sampling Method.
14. Give an account on writing the quality assurance manual.
15. Describe in brief method of validation
16. Give the difference between quality control and quality assurance.
17. Explain types of sampling with suitable example?
18. What are the advantages of instrument calibration and maintenance?
19. What are the three levels of quality Control?
20. What is the basic rule of probability sampling?
21. Explain how calibration of instruments is done.
22. Write difference between probability sampling method and non-probability sampling method.
23. Write a short note on sample handling.
24. Describe a brief method of validation?
25. What is a quality plan?
26. Explain good laboratory practices and personnel.
27. Write a difference between quality control and quality assurance.
28. Explain retention factor.
29. What is a QA procedure?
30. What is purpose of ICH?
31. Write Short note on ICH guidelines.
32. What is mass balance in sustainability?
33. Define sampling and give any four examples.
34. Define X-Quality control chart. Explain X-Quality control chart.
35. What is the purpose of instrument calibration?
36. What is the basic principle of calibration?
37. What is instrument span?
38. What are the 4 types of control charts? Explain any one in brief.
39. What is Upper Control Limit (UCL) and the Lower Control Limit (LCL).
40. Which are the four ICH guidelines? Explain any one in brief.
41. How computer is used in quality assurance?
42. What factors affect resolution in HPLC?
43. How does flow rate affect resolution in HPLC?
44. What is mass balance in food industry?

45. What is the linear calibration formula? Why does a calibration curve have to be linear?

**Answer the following Questions**

**Mark 6**

1. Define sampling. Explain types of Sampling.
2. Describe in detail factors affecting resolution in a chromatogram.
3. Explain in brief reporting of quality assurance problems.
4. What is the main purpose of standard operating procedure? How do you organize standard operating procedures?
5. Explain snowball sampling? Give uses of non-probability sampling.
6. Explain X-quality control chart and R-quality control chart.
7. Explain in brief standard operating systems.
8. What is procedure index? Explain quality Policy in the company.
9. Describe in brief various HPLC separation modes.
10. What is index and stored procedure in the database? What is the difference between a registry and an index?
11. Explain snowball sampling and Explain types of snowball sampling.
12. What is the primary arrangement of the procedure index?
13. What is the validation of analytical methods? Why is it necessary?
14. What is probability sampling? Explain types of probability sampling with an example.
15. Explain in detail mass balance. Give the significance of mass balance.
16. What do you mean by documents? How they are classified.
17. Explain in brief reporting of quality assurance problems.
18. Define sampling. Explain types of sampling.
19. Describe in detail factors affecting resolution in a HPLC chromatogram.
20. What is quality control? Explain in Brief sample handling.
21. What is reagent and its types?
22. Explain stratified random sampling. Write uses of probability sampling.
23. What is calibration? How is maintained.
24. Explain X-Quality control chart and R-Quality control chart.
25. Explain types of probability sampling and non-probability sampling.
26. What is a Stratified random sampling? What are the two types of stratified random sampling?
27. What are the types of notebook paper? What is a standard notebook?
28. What is a reagent? Give any example.
29. What is sample registration and login? How do you write test data for a login page?
30. What is standard operating procedure Software?