

SECTION - I

*Write answers of two sections in two different answer sheets.*

- Q.1] Answer in short (any 5) 10
7. Define analytical chemistry
  8. State Nernst Distribution Law
  9. Define sampling
  10. Define absolute error and relative error
  11. Define pH, calculate pH of 0.05M HCl
  12. What is polyprotic acid?
- Q.2] Answer in brief (any 4) 20
7. What is the scope of analytical chemistry?
  8. Define and explain: Deviation, Standard Deviation, R.S.D. & C.D.V.
  9. What do you mean by random errors and systematic errors? How do you differentiate between them?
  10. Explain theory of metal-ion-indicators
  11. What are different types of indicators? Explain briefly.
  12. Explain theory of acid base indicators
- Q.3] Answer in detail (any 2) 20
5. Calculate pH at different stages of titration and explain titration curve for titration of 0.1M HCl against 0.1M NaOH.
  6. Discuss why no suitable indicator is available for titration of weak acid v/s weak base.
  7. Explain why methyl orange is not suitable indicator for titration of weak acid against weak base.
  8. What is meant by validation of analytical methods? Explain parameters used for validation of methods.

SECTION - II (use another answer sheet)

- Q.1] Define following terms ( Any 4 ) 04
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|---------------------|----------------------|---------------|
| 1. Sampling error   | 2. Accuracy          | 3. Document   |
| 4. Misbranded drugs | 5. Bursting strength | 6. Validation |
- Q.2] Write difference between the following. ( Any 3 ) 06
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|----------------------------------|--|
| 1. GMP & GLP                     | 2. KF titration & LOD                    |
| 3. Drugs & spurious drugs        | 4. Corrective action & Preventive action |
| 5. Approved & Under test sample. |  |
- Q.3] Write short notes on (Any 4) 16
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|--------------------------|---|
| 1. Just in Time approach | 2. Sampling SOP                         |
| 3. Bar coding            | 4. Functions of Drug Control Department |
| 5. Limit test for Iron   | 6. Geographical indication.             |
- Q.4] Write answers in brief (Any 4) 16
7. What are limit tests? Describe limit test for Arsenic by IP method.
  8. What are the functions of Quality Control Department ?
  9. Which are the main laws governing pharma. & chemical Industry?
  10. What is a trademark? What type of protection is provided by a trademark?
  11. What are the general safety & precautionary measures taken during sampling?
  12. What are the eight quality management principles included in ISO 9001: 2000 ?

- Q.5] Write a note on (Any 1) 08
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|------------------------------|-----------|-------------------------|
| 1. Good laboratory practices | 2. Kaizen | 3. ISO & ISO 9001: 2000 |
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