Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Pharm (OLD)/SEM-1/PT-101/2009-10

2009
PHARMACEUTICAL ANALYSIS

Time Allotted : 3 Hours Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer Question No. 1 and any *four* from the rest.

1. Choose the correct alternatives of the following : $10 \times 1 = 10$

   i) The indicator range of phenolphthalein is

      a) 4·2 — 10·2 b) 6·5 — 7·4

      c) 8·3 — 10·0 d) 3·2 — 4·4.

   ii) Common ion effect is based on which of the following theoretical principles ?

      a) Solubility product principle

      b) Le Chatelier's principle

      c) Arrhenius principle

      d) All of these.

   iii) An example of Lewis acid is

      a) BF_3 b) Al^{+3}

      c) both of these d) none of these.

iv) Which one of the following is a primary standard ?

a) Sodium chloride

b) Potassium hydrogen phthalate

c) Both of these

d) Sodium hydroxide.

v) Mercuric nitrate is assayed by

a) gravimetric analysis b) non-aqueous titrations

c) precipitation titrations d) all of these.

vi) Precipitation techniques are practiced in the

a) redox titrations b) acid-base titrations

c) gravimetric analysis d) none of these.

vii) Potassium permanganate is used in the

a) redox titrations

b) precipitation titrations

b) oxidation titrations

d) reduction titrations.

viii) The ionic product (Kw) of water is

a) 10^{-7} gram – ions per litre

b) 10^{-70} gram – ions per litre

c) 10^{-77} gram – ions per litre

d) 10^{-71} gram – ions per litre.

ix) In the assay of H_3PO_4 the ionization of Na_2HPO_4 is prevented by limiting water in the titration and the addition of sodium chloride which is an application of

a) solubility product theory

b) common ion effect

c) all of these

d) none of these.

x) In Mohr's titration, which of the following chemicals is used as primary standard ?

a) Potassium chloride b) Barium chloride

c) Sodium chloride d) Silver nitrate.

2. a) Explain the acid-base theories and state what theory is mostly used and why ? 7 + 3

b) Derive Henderson-Hesselbach equation and give its significance. 5

3. a) Write about the solvents used in non-aqueous titrations. Explain the importance of using them. 7

b) Write the theory of Indicator's used in the acid-base titrations. 8

4. a) Write note on Solubility product. 5

b) Write note on Common ion effect. 5

c) Explain Mohr's method in the precipitation titrations. 5

5. a) Write about the Concept of oxidation and reduction. 6

   b) Write about the Theory of Redox titrations. 4

   c) Write about the Redox indicators. 3

   d) Give an example of Redox titration. 2

6. a) Write about the Thermo gravimetric curves. 5

   b) Write about the Acid-base titration curves. 5

   c) Write about the Buffer solutions. 5

7. Write about the titrations which involves any *three* of the following chemicals : 3×5

   a) H_3PO_4

   b) Barium Sulphate

   c) $KMnO_4$

   d) Magnesium as Magnesium Sulphate

   e) Ceric Sulphate.

8. a) State the significance of quantitative analysis in quality control. 5

   b) Write the methods of expressing the concentration. 5

   c) Write about the Primary and secondary standards. 5