



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)  $\text{BF}_3$                                       b)  $\text{Al}^{+3}$   
c) both of these                          d) none of these.

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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

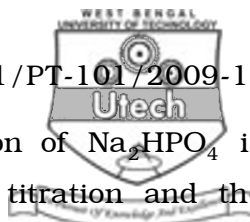
- a) redox titrations    b) acid-base titrations
- c) gravimetric analysis    d) none of these.

vii) Potassium permanganate is used in the

- a) redox titrations
- b) precipitation titrations
- b) oxidation titrations
- d) reduction titrations.

viii) The ionic product (  $K_w$  ) 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-Hasselbach 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

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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)  $\text{H}_3\text{PO}_4$   
b) Barium Sulphate  
c)  $\text{KMnO}_4$   
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