CS/B.PHARM/SEM-1/PT-101/2012-13

2012

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.

GROUP – A
(Multiple Choice Type Questions)

1.   Choose the correct alternatives for any *ten* of the following :

$$10 \times 1 = 10$$

i)   pOH is equal to

   a)   pH + pKw   b)   pKw/pH

   c)   pKw – pH   d)   none of these.

ii)   Which of the following is an aprotic solvent ?

   a)   Acetic acid   b)   Water

   c)   Toluene   d)   None of these.

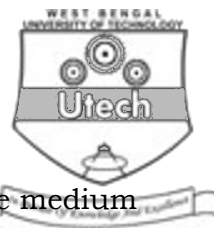iii) The molarity of a solution containing 11·6 gm NaCl in
      250 ml is

   a)   0·05   b)   0·005

   c)   0·125   d)   0·5.

1104   [Turn over

iv) Mohr's method requires

   a) acidic medium   b) alkaline medium

   c) neutral medium   d) none of these.

v) $BaSO_4$ is more soluble in

   a) neutral medium   b) acidic medium

   c) alkaline medium   d) any medium.

vi) Indicator used in iodine titration is

   a) diphenyl amine   b) ferroin

   c) $KMnO_4$ d) starch.

vii) Which of the following is a Primary Standard ?

   a) Sodium carbonate   b) Sulphuric acid

   c) Oxalic acid   d) both (a) and (c).

viii) A measure of how closely a measured quantity agrees with the true value is

   a) absolute error   b) precision

   c) accuracy   d) variance.

ix) Example of self indicator is

   a) potassium permanganate

   b) fluorescein

   c) ferric ammonium sulphate

   d) potassium chromate.

x) Which of the following is independent of temperature ?

   a) Molarity   b) Normality

   c) Molality   d) All of these.

xi) According to I.P. strength of cone, HCl is

   a) 18 N   b) 16 N

   c) 12 N   d) 36 N.

xii) Buffer is mainly used

    a)   to control the solubility

    b)   to control precipitation

    c)   to control pH

    d)   to control temperature.

xiii) The modern technique developed for the gravimetric analysis is

    a)   DSC

    b)   sohibilisation

    c)   thermoanalytical analysis

    d)   none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following $3 \times 5 = 15$

2. a) What are the requirements that should meet to be a Primary Standard ?

    b) Give example (at least two) of Primary Standard for acid-base titration and oxidation-reduction titration.   3 + 2

3. Define co-precipitation. Explain various process for minimizing co-precipitation.   1 + 4

4. a) Explain hydrogen ion exponent.

    b) Derive Henderson-Hasselbatch equation.   2 + 3

5. Find out a relation among Kh, Ka and Kw in a dilute solution of the salt of weak acid and a strongbase.

6. Explain clearly the meaning of the terms (any *five*) :

(i) Mean, (ii) Median, (iii) Standard deviation, (iv) Relative average deviation, (v) Systemic error, (vi) Random error, (vii) Precision and accuracy.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) Explain Nernst equation for electrode potential.
   b) What is Standard Potential ?
   c) What is salt bridge in an electrochemical cell ? Write down its function.
   d) Write in brief on 'Redox indicators'. $4 + 2 + 3 + 6$

8. a) Define 'Buffer solution'.
   b) Calculate the pH of 0·005(N) acetic acid, if it is 10% ionized.
   c) Define the term 'titration curve'.
   d) Describe titration curve of strong acid neutralized by weak base and strong base.
   e) Polyprotic acid by strong base. $2 + 2 + 3½ + 3½ + 4$

9. a) Explain the thermogravimetric curves.
   b) What is the significance of colloidal state ?
   c) Describe the assay of calcium as calcium oxalate by gravimetric analysis. $5 + 5 + 5$

10. a) What is formal potential ? How will you prepare and standardize 0·1 M $KMnO_4$? Which type of indicator you should use ?
    b) What do you mean by iodimetry and iodometry ?
    c) What are the advantages and disadvantages of starch indicator ? $8 + 3 + 4$

11. a) Write the effect of pH on Mohr's method for determination of chloride.
    b) Briefly explain Volhard method for determination of chloride.
    c) Write the mechanism by which an adsorption indicator works.
    d) What are the factors that must be considered in choosing proper absorption indicator ? $2 + 3 + 5 + 5$

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