|                           | Utech                       |
|---------------------------|-----------------------------|
| Name:                     |                             |
| Roll No.:                 | A Spring Of English English |
| Invigilator's Signature : |                             |

## CS/B.Pharm/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.

# GROUP - A ( Multiple Choice Type Questions )

- 1. Choose the correct alternatives for any ten of the following:  $10 \times 1 = 10$ 
  - i) Sodium ethionaite is the salt of a
    - a) strong acid and strong base
    - b) strong acid and weak base
    - c) weak acid and strong base
    - d) weak acid and weak base.
  - ii) pH is defined as
    - a)  $ln[H^+]$
- b)  $-ln\left[H^{+}\right]$
- c)  $log[H^+]$
- d)  $-\log[H^+]$ .

11903 [ Turn over

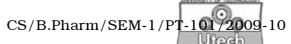
### CS/B.Pharm/SEM-1/PT-101/2009-10

- iii) The solvents which are acidic in nature and readily donate proton are
  - a) protogenic solvents
- b) aprotic solvents
- c) protophilic solvents
- d) amphiprotic solvents.
- iv) Ascorbic acid can be assayed by
  - a) iodometric method
  - b) using 2, 6 dichlorophenol indophenol
  - c) both (a) (b)
  - d) none of these.
- v) 0.0035 contains
  - a) two significant figure
  - b) five significant figure
  - c) four significant figure
  - d) three significant figure.
- vi) Which of the following is independent of temperature?
  - a) molarity
- b) normality
- c) molality
- d) all of these.
- vii) The titration of ammonium thiocyanate  $[NH_4SCN]$  vs silver nitrate  $[AgNO_3]$  is commonly termed as

2

- a) Volhard's method
- b) Mohr's method
- c) Fajan's method
- d) None of these.

11903



- viii) In redox titrations which of the following acts as a self-indicator?
  - a) potassium permanganate
  - b) potassium dichromate
  - c) potassium dimanganate
  - d) potassium monochromate.
- ix) Which one of the following is not a polyprotic acid?
  - a)  $H_2SO_4$

b)  $H_3BO_3$ 

c)  $H_3PO_4$ 

- d) HCl.
- x) Which of the following is a primary standard?
  - a) Na<sub>2</sub>CO<sub>3</sub>
- b) Oxalic acid

c)  $H_2SO_4$ 

- d) both (a) & (b).
- xi) In alkaline solution the colour of the phenolpthalein is
  - a) colourless
- b) yellow

c) red

- d) blue.
- xii) The molarity of a solution containing 6 gm of NaCl in 200 ml of solution is
  - a) 0.02

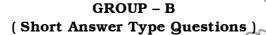
b) 0.513

c) 1.95

d) 0·125.

11903 3 [ Turn over

#### CS/B.Pharm/SEM-1/PT-101/2009-10

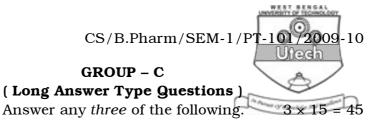




Answer any three of the following.

- 2. Explain any *two* of the following terms :  $2 \times 2\frac{1}{2}$ 
  - a) Buffer action
  - b) Levelling effect
  - c) Equiibrium constant.
- 3. Classify the different types of errors. Differentiate between precision and accuracy with suitable examples. 2 + 3
- 4. What are molarity and normality ? Concentrated  $\rm H_2SO_4$  ( M.W 98 ) has a density 1·84 gm/ml and is 98% by weight. Calculate the normality and molarity. 1 + 4
- 5. Calculate the equivalent weight of  $KMnO_4$  in acidic medium & neutral medium. What is the difference between iodometry and iodimetry? Define Redox indicators. 1 + 1 + 2 + 1
- 6. Define Argentometric titration. Explain Volhard's method of Argentometric titration in brief. The solubility AgCl in water at 25° C is 0.00179 gm/lt. Calculate the solubility product of silver chloride.  $\frac{1}{2} + 3 + 1\frac{1}{2}$

11903 4



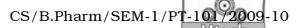
- 7. a) Why is  $KMnO_4$  not a primary standard?
  - b) Prove that equilibrium constant,  $K = 3 \times 10^{63}$  during the oxidation of ferrous sulphate with potassium permanganate.
  - c) Why does diphenylamine act as redox indicator?
  - d) Write down the chemical structure of diphenyl benzidine.
  - e) What is the role of phosphoric acid in the titration of ferrous ion by potassium dichromate using diphenyl amine as indicator? 3 + 5 + 3 + 2 + 2
- 8. a) Describe the different types of crucibles and importance of using crucible.
  - b) Describe the criteria of washing solution for the precipitate.
  - c) Define thermogravimetry curve. Discuss the T.G. curve for calcium oxallate monohydrate. 5 + 3 + 7

11903 5 [ Turn over

#### CS/B.Pharm/SEM-1/PT-101/2009-10

- 9. a) What do you mean by the term "Buffer Solution"
  - b) Calculate the pH of 0.001 N acetic acid, if it is 10% ionized.
  - c) Define the term "Titration Curve". Describe the titration curve of Strong acid with Strong base & Weak base.
  - d) Discuss "law of mass action" & "polyprotic system". What is the relationship between strength & concentration? Write down the importance of Buffer in pharmaceutical fields. 1+2+1+4+4+1+2
- 10. a) What is the significance of qualitative analysis in Quality control?
  - b) What do you mean by the term "Standard Deviation"?
  - c) The normality as a solution Sodium Hydroxide as determined by an 'Analysis' by Eight different titrations are found to be 0.5038; 0.5049; 0.5139; 0.5042; 0.5039; 0.5010; 0.5021 and 0.5093. Calculate the mean, average or mean deviation relative mean deviation, average deviation of the mean & standard deviation.
  - d) Write down the various methods of minimizing systematic errors. 4 + 2 + 5 + 4

11903 6



- 11. a) Explain the effect of temperature & solvent upon the solubility of precipitate.
  - b) Compare & contrast Mohr's method & Volhard's method in Argentometric titration.
  - c) Write down the qualities of a good adsorption indicator used in Fajan's method of titration.
  - d) The solubility product of AgCl in water is  $1.5 \times 10^{-10}$ . Calculate its solubility in 0.01 M NaCl aqueous solution.
  - e) Explain the role of solubility product in Argentometry.  $(\ 2\times 2\ )+4+2+2+3$

11903 7 [ Turn over