



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.PHARM/SEM-1/PT-101/2011-12**

**2011**

**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**

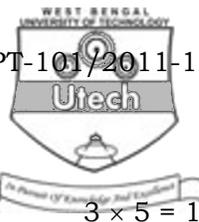
**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for any *ten* of the following :  
10 × 1 = 10
  - i) Chloroform is a
    - a) amphiprotic solvent
    - b) protogenic solvent
    - c) protophylic solvent
    - d) aprotic solvent.
  - ii) How many significant digits are present in 1.0050 ?
    - a) 2
    - b) 4
    - c) 5
    - d) 6.
  - iii) During iodometric titration in presence of concentrated hydrochloric acid, which of the following will be used as indicator ?
    - a) Starch solution
    - b) Diphenyl amine
    - c) Amaranth dye
    - d) Ferroin.
  - iv) The colour change of Redox indicator is due to
    - a) change in H<sup>+</sup> ion concentration
    - b) change in OH<sup>-</sup> ion concentration
    - c) change in potential of solution
    - d) all of these.

1203

[ Turn over





**GROUP - B**

**( Short Answer Type Questions )**

Answer any *three* of the following 3 × 5 = 15

2. What is post-precipitation ? Explain Volhard's method for estimation of silver. 2 + 3
3. Write a short note on levelling effects.
4. Describe the ways in which the end points of redox titrations may be detected visually.
5. a) Calculate the equivalent weight of  $KMnO_4$  in acidic, neutral and alkaline media ?  
 b) Why is  $KMnO_4$  acidified with dilute sulphuric acid but not with  $HCl$  or  $HNO_3$  ? 3 + 2
6. a) Calculate the volume of  $HCl$  ( specific gravity = 0.6 & percentage purity = 60.07 ) required to prepare a litre of 0.1 N  $HCl$  acid solution.  
 b) Define Primary and Secondary standards with examples. 3 + 2

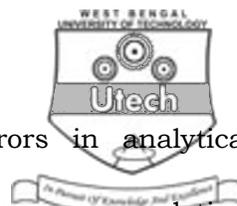
**GROUP - C**

**( Long Answer Type Questions )**

Answer any *three* of the following. 3 × 15 = 45

7. a) Explain Nernst equation for electrode potential.  
 b) What is standard potential ?  
 c) What is the function of salt bridge in an electrochemical cell ?  
 d) Using the given data, calculate the standard potential for the following cell & also write the half-cell reactions.  
 $E^0_{Mg^{+2}/Mg} = -2.363 V$ ;  $E^0_{Cu^{+2}/Cu} = +0.337 V$   
 For  $Mg | Mg^{+2}(1M) || Cu^{+2}(1M) | Cu$   
 e) Write down some common oxidizing agents used in Redox titrations. 3 + 2 + 2 + 5 + 3
8. What is meant by quantitative analysis ? How will you differentiate it from qualitative analysis ? Describe the steps involved in Gravimetric analysis with a suitable example. What is T.G.A. ? 2 + 2 + 10 + 1

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9. a) Describe the various types of Errors in analytical chemistry.
- b) Write down the effect of systemic errors on analytical results.
- c) What are Relative standard deviation and coefficient of variation ? 8 + 5 + 2
10. a) Define Titration curve in Neutralization titration. Discuss titration curves for the neutralization of ( any two ) :
- i) Strong acid with strong base
- ii) Weak acid with weak base
- iii) Strong acid with weak base
- iv) Weak acid with strong base.
- b) What is the pH of a solution ? Can a solution have zero & negative pH ? Justify your answer.
- c) Calculate the amount of NaOH in 1 litre of solution when the pH of the solution will be 12 ? 1 + ( 3 × 2 ) + ( 1 + 2 + 2 ) + 3
11. a) What is the difference between iodometry and iodimetry ?
- b) What are the advantages and disadvantages of starch as an indicator ?
- c) What primary standard is used in iodometric titration ?
- d) How do you standardize the iodine solution ?
- e) Define back titration. 3 + 4 + 1 + 5 + 2

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