

09-01-2019

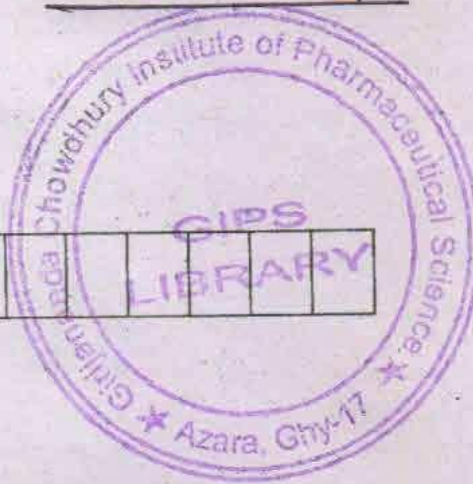
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BP 102 T

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2019



B.Pharm 1st Semester End-Term Examination
PHARMACEUTICAL ANALYSIS — I — THEORY
(New Regulations)
(w.e.f. 2017-2018)

Full Marks – 75

Time – Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following questions : (20 × 1 = 20)
- (i) Addition of acid to indicator will shift equilibrium towards
 - (a) Right (b) Left
 - (c) Up (d) Down
 - (ii) Phenolphthalein changes color in
 - (a) Acids (b) Water
 - (c) Alkalis (d) Salt solutions
 - (iii) What is the solubility product constant expression for Ag₃PO₄?
 - (a) $K_{sp} = [Ag^+][PO_4^{3-}]$
 - (b) $K_{sp} = [Ag^+][PO_4^{3-}]^3$
 - (c) $K_{sp} = [Ag^+]^3[PO_4^{3-}]$
 - (d) $K_{sp} = [3Ag^+]^3[PO_4^{3-}]$

[Turn over

- (iv) A substance which produces hydroxide ions in solution is a definition of which of the following?
- (a) An Arrhenius acid
 - (b) An Arrhenius base
 - (c) Bronsted-Lowry acid
 - (d) Bronsted-Lowry base
- (v) Co-precipitation and Post – precipitation are the example of:
- (a) Operational error
 - (b) Methodic error
 - (c) Personal error
 - (d) Instrument or reagent error.
- (vi) A Bronsted-Lowry acid is defined as a substance that
- (a) Releases $H^+_{(aq)}$
 - (b) Releases $OH^-_{(aq)}$
 - (c) Accepts a proton
 - (d) Donates a proton
- (vii) Following is used as indicator in the titration of $CuSO_4$ vs hypo
- (a) Phenolphthalein
 - (b) $1D^2$
 - (c) Starch
 - (d) $KMnO_4$

(viii) Accuracy expresses:

- (a) Reproducibility of a measurement
- (b) Correctness of a measurement
- (c) Both
- (d) None

(ix) In 1.3680 the significant figures are:

- (a) 3 (b) 4
- (c) 5 (d) 6

(x) Titrimetry deals with the:

- (a) Weight of the solution
- (b) Composition of the solution
- (c) Nature of the solution
- (d) Volume of the solution

(xi) Solubility product of the precipitate formed, must be

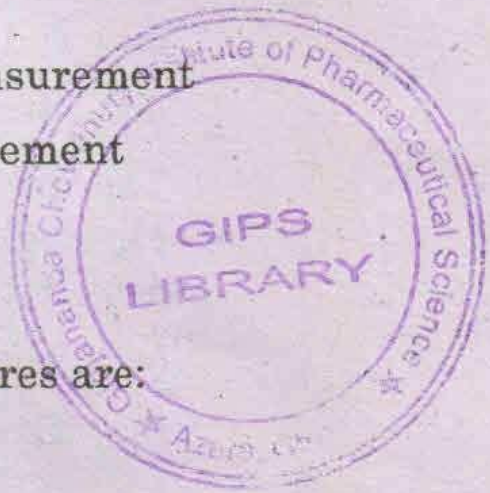
- (a) High
- (b) Low
- (c) Zero
- (d) It does not have any effect

(xii) All the water of crystallisation in $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is lost on attaining a temperature of:

- (a) 200°C (b) 90°C
- (c) 1000°C (d) 275°C

(xiii) When KMnO_4 is reduced with oxalic acid in acidic solution O.S. of Mn changes from

- (a) 7 to 4 (b) 6 to 4
- (c) 7 to 2 (d) 4 to 2



- (xiv) Iodine is liberated during:
- (a) Iodimetry
 - (b) Iodometry
 - (c) Both
 - (d) None
- (xv) The process by which a substance without physical separation is so transformed that it does not enter a particular reaction is called
- (a) Masking
 - (b) Demasking
 - (c) Sequestering
 - (d) Kinetic masking
- (xvi) The stability of chelates formed in complexes depends upon
- (a) The No. of members in each ring
 - (b) Valency state of metal
 - (c) pH
 - (d) All of the above
- (xvii) Half wave potential is the distance between
- (a) Kinetic current and Migration current
 - (b) Residual current and limiting current
 - (c) Residual current and migration current
 - (d) None of these
- (xviii) In case of Ilkovic Equation:
- (a) Residual current is directly proportional to the conc. of the substances
 - (b) Diffusion current is directly proportional to the conc. of the substances
 - (c) Migration current is directly proportional to the conc. of the substances
 - (d) None of the above

(xix) Which of the following is the unit of conductivity?

- (a) Ohm cm (b) Ohm
(c) Mhos (d) Ohm cm¹

(xx) Water may interfere with non aqueous titration by

- (a) Acting as strong acid than the weakly acidic drug
(b) Acting as strong base than the weakly basic drug
(c) Both
(d) None.

2. Answer the following: (Any seven): (7 × 5 = 35)

(a) Explain in detail about the indicator theory of acid base titration

(b) Define error. Classify error citing example and explain the methods to minimize errors

(c) Explain the following with suitable example:

(i) Law of mass action

(ii) Common ion effect. (2.5 + 2.5 = 5)

(d) Explain the basic principles of potentiometry. What are the types of electrodes used in potentiometric titration? Explain the potentiometric curve for acid base titration. (1+1+3=5)

(e) What are the basic principles involved in polarography? Write about the apparatus and working of polarography cell. (1+4=5)

(f) What is non-aqueous titration? Give a detail note about the different types of solvents used in non-aqueous titration along with suitable examples. (1+4=5)

(g) Explain the basic principle and application of diazotization reaction. (3+2=5)

(h) What is the difference between iodometry and iodimetry? Explain the procedure for the standardization of 0.1 (M) KMnO_4 . (1+4=5)

(i) What is thermogravimetry curve? Explain the thermal decomposition of Copper Sulphate Pentahydrate. (1+4=5)

3. Answer the following: (Any two)

(a) What is complexometric titration? Explain the basic mechanism of complexation. Discuss the various types of complexometric titration. Draw the complexometric titration curve and label its various regions. (1+2+4+3=10)

(b) What is Argentometric titration? Write a notes on Mohr's method? Explain the limitations of Mhor's method. (1+7+2=10)

(c) Write Short Notes on: (any two) (5+5=10)

(i) Metal ion indicator.

(ii) Preparation and Standardisation of 0.1(N) Perchloric acid.

(iii) Nephloturbidometry.

