

SEMESTER I

PHARMACEUTICAL ANALYSIS

(BP102TP)

Multiple Choice Questions

1. _____ is used as primary standard for standardization of NaOH.
- A. Sodium carbonate
 - B. Sodium bicarbonate
 - C. Sodium chloride
 - D. Potassium dichromate

Ans. B

2. Phenolphthalein has a pH range of
- A. 6.8 – 8.4
 - B. 1.2 – 2.8
 - C. 8.3 – 11.0
 - D. 4.2 – 6.3

Ans. C

3. Errors arise due to the individual analyst is responsible for them
- A. Method error
 - B. Instrumental error
 - C. Personal error
 - D. Random error

Ans. C

4. Solution of known concentration
- A. Standard solution
 - B. Concentration
 - C. Solution
 - D. Concentrated solution

Ans. A

5. Acid is a substance which dissociates in water to produce hydrogen ions
- A. Arrhenius theory
 - B. Lewis theory
 - C. Bronsted theory
 - D. Lowry theory

Ans. A

6. The colour change is due to ionisation of the acid base indicators
- A. Ostwald theory
 - B. Chromophore theory
 - C. Quinonoid theory
 - D. Resonance theory

Ans. A

7. Substance that can be reversibly oxidized or reduced, having different distinct colour in the individual oxidized and reduced forms
- A. Redox indicators
 - B. Redox potential
 - C. Redox number
 - D. Redox state

Ans. A

8. 20 gm NaOH in 500 ml =
- A. 0.1 N
 - B. 1 N
 - C. 0.5 M
 - D. 0.05 N

Ans. B

9. In oxidation reduction change in _____ of reacting element takes place.
- A. Volume
 - B. pH
 - C. Absorbance
 - D. Valency

Ans. D

10. _____ is not an amphoteric solvent.
- A. Water
 - B. Alcohol
 - C. Acetic acid
 - D. None

Ans. D

11. _____ is not type of co-precipitation.
- A. Surface adsorption
 - B. Occlusion
 - C. Crystallization
 - D. Mechanical entrapment

Ans. D

12. Oxidation-Reduction titration is also known as
- A. Complexometric titration

- B. Gravimetric titration
- C. Redox titration
- D. Gasometric titration

Ans. C

13. Potentiometry is type of _____ method.

- A. Qualitative
- B. Chromatographic
- C. Classical
- D. Electro-chemical

Ans. D

14. _____ is chelating agent

- A. Salicylic acid
- B. EDTA
- C. Benzoic acid
- D. Glycerol

Ans. B

15. _____ used as titrant in non-aqueous titration.

- A. EDTA
- B. Perchloric acid
- C. Sodium nitrite
- D. Silver nitrite

Ans. B

16. Conductometry used for the measurement of

- A. Conductivity
- B. Potential
- C. Temperature
- D. Concentration

Ans. A

17. Standardization of Iodine is carried out using _____

- A. Sodium thiosulphate
- B. Oxalic acid
- C. Perchloric acid
- D. None of these

Ans. A

18. The degree of agreement between measured value and accepted true value is

- _____
- A. Precision
 - B. Accuracy
 - C. Range
 - D. Average deviation

Ans. A

19. Behavior of indicator is explained by _____ theory.

- A. Chromospheres
- B. Ionic
- C. Color
- D. Resonance

Ans. D

20. pH is defined as

- A. $-\log [\text{OH}^-]$
- B. $-\log [\text{H}^+]$
- C. $\text{pH} + \text{pOH}$
- D. $\log \text{pOH}$

Ans. B

21. The titration carries out between KCl and AgNO₃ is termed as _____ titration.

- A. Oxidation-Reduction
- B. Precipitation
- C. Acid-Base
- D. None of these

Ans. B

22. 8.5 ml HCl in 1 litre = _____

- A. 0.1 M
- B. 0.1 N
- C. Both A and B
- D. 0.5 M

Ans. A

23. The number of gm-equivalent of the solute per liter of solution is known as

- A. Normality
- B. Molarity
- C. Molality

D. Mole fraction

Ans.A

24. The number of gm-mole of the solute per liter of solution is known as

- A. Normality
- B. Molarity
- C. Molality
- D. Mole fraction

Ans.B

25. The number of gm-mole of the solute per kg of solution is known as

- A. Normality
- B. Molarity
- C. Molality
- D. Mole fraction

Ans.C

26. The ratio of number of gm-mole of a component to total number of gm-mole in mixture or solution is known as

- A. Normality
- B. Molarity
- C. Molality
- D. Mole fraction

Ans.D

27. The number of gms of solute per 100 ml of solvent is known as

- A. Normality
- B. % weight by volume
- C. Molality
- D. Mole fraction

Ans.B

28. The chemical reagent from which solution of required concentration can be prepared is

- A. Secondary standard
- B. Dilute solution
- C. Concentrated solution
- D. Primary standard

Ans.C

29. In strong acid - strong base titration, the pH of mixture at initial stage is find out by formula

- A. $\text{PH} = -\log[\text{H}^+]$
- B. $[\text{H}^+] = \frac{\text{NaVa} - \text{NbVb}}{\text{Va} + \text{Vb}}$
- C. $\text{POH} = -\log[\text{OH}^-]$
- D. $[\text{OH}^-] = \frac{\text{NbVb} - \text{NaVa}}{\text{Va} + \text{Vb}}$

Ans.A

30. In Standard solution which of the following is accurately known ,

- A. Normality, strength or % of chemicals
- B. Volume
- C. Pressure
- D. Temperature

Ans.A

31. The process of adding known concentration until it complete the reaction with known volume is called as

- A. Titrant
- B. Analysis
- C. Titration
- D. Titrend

Ans.C

32. In titration end point can be determined by change in colour by

- A. Measuring cylinder
- B. Burette
- C. Instrument
- D. Indicator

Ans.D

33. The Quantity of chemical in each liter of solution is known as

- A. Normality
- B. Strength
- C. Molecular Weight
- D. Equivalence Weight

Ans.B

34. Exactly required concentration can be prepared from chemical reagent is called as

- A. Primary standard
- B. Secondary standard

- C. Both A & B
- D. None of this

Ans.A

35. An example of a primary standard substance is

- A. FeSO_4
- B. Na_2CO_3
- C. NH_4OH
- D. NaOH

Ans.B

36. A normal solution is one which contains

- A. Gram molecular weight/L
- B. Gram equivalence weight/L
- C. Gram formula weight/L
- D. Gram molecular weight/Kg

Ans.B

37. A buffer solution can be formed by dissolving equal moles of

- A. HF and NaF
- B. HCl and NaOH
- C. KBr and Na_3PO_4
- D. CH_3COOH and NaCl

Ans. A

38. The conjugate acid of HAsO_4^{2-} is

- A. H_3O^+
- B. ASO_4^{3+}
- C. H_3ASO_4
- D. H_2ASO_4^*

Ans.B

39. Which of the following indicators has a transition point closest to the equivalence point for the titration of a weak acid by a strong base?

- A. Orange IV
- B. Thymol blue
- C. Methyl orange
- D. Bromocresol green

Ans.B

40. A solution of known concentration is the definition of a

- A. Buffer solution.
- B. Neutral solution.
- C. Standard solution.
- D. Saturated solution.

Ans.C

41. Which of the following is the strongest Bronsted-Lowry base?

- A. NH₃
- B. CO₃²⁻
- C. HSO₃
- D. H₂BO₃

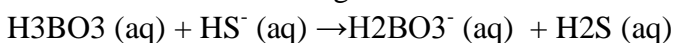
Ans.B

42. An Arrhenius acid is defined as a chemical species that

- A. is a proton donor.
- B. is a proton acceptor.
- C. Produces hydrogen ions in solution.
- D. Produces hydroxide ions in solution.

Ans.C

43. Consider the following reaction:



The order of Bronsted-Lowry acids and bases in this equation is

- A. Acid, base, base, add.
- B. Acid, base, acid, base.
- C. Base, acid, acid, base.
- D. Base, acid, base, acid.

Ans.D

44. Which of the following indicators is yellow at a pH of 10.0?

- A. Methyl red
- B. Phenol red
- C. Thymol blue
- D. Methyl violet

Ans.A

45. Which of the following is a general property of bases?

- A. Taste sour
- B. Turns litmus red

- C. Conduct electric current in solution
- D. Concentration of H_3O^+ is greater than concentration of OH^-

Ans.C

46. The conjugate base of an acid is produced by

- A. Adding a proton to the acid.
- B. Adding an electron to the acid.
- C. Removing a proton from the acid.
- D. Removing an electron from the acid

Ans.C

47. A buffer solution may contain equal moles of

- A. Weak acid and strong base.
- B. Strong acid and strong base.
- C. Weak acid and its conjugate base.
- D. Strong acid and its conjugate base.

Ans.C

48. Which of the following are general properties of bases in aqueous solution?

- A. Feel slippery and increase H_3O^+
- B. Turn litmus red and accept a proton
- C. Conduct electricity and turn litmus blue
- D. Feel slippery and react with Au to produce H_2 (g)

Ans.C

49. Pure sodium hydrogen phthalate is used to standardize a solution of NaOH for acid-base titration. What term is used to describe the sodium hydrogen phthalate?

- A. Titrant base
- B. Standard buffer
- C. Equivalent base
- D. Primary standard

Ans.D

50. An Arrhenius base is defined as a compound that

- A. Accepts OH^- in solution.
- B. Releases OH^- in solution.
- C. Accepts protons in solution.
- D. Donates protons in solution.

Ans.B

51. A Bronsted-Lowry acid is defined as a substance that

- A. releases H^+ (aq)
- B. releases OH^- (aq)
- C. accepts proton in solution
- D. donates proton in solution

Ans.D

52. A basic solution can be defined as one in which

- [H_3O^+] is not present
- [H_3O^+] is equal to [OH^-]
- [H_3O^+] is less than [OH^-]
- [H_3O^+] is greater than [OH^-]

Ans.C

53. A chemical indicator in solution consists of

- A. A weak acid and its conjugate acid.
- B. A weak acid and its conjugate base.
- C. A strong acid and its conjugate acid.
- D. A strong acid and its conjugate base.

Ans.B

54. What do a chemical indicator and a buffer solution typically both contain?

- A. A strong acid and its conjugate acid
- B. A strong acid and its conjugate base
- C. A weak acid and its conjugate acid.
- D. A weak acid and its conjugate base

Ans.D

55. When performing a titration experiment, the indicator must always have

- A distinct colour change at $pH = 7.0$.
- B. The ability to change from colourless to pink,
- C. A transition point that is close to the equivalence point.
- D. An equivalence point that is close to the stoichiometric point. ...

Ans.C

56. Which of the following is not a good use for an acid-base titration curve?

- A. to determine the concentration of the base
- B. to select a suitable indicator for the titration
- C. to determine whether the acid is strong or weak
- D. to select a suitable primary standard for the titration

Ans.D

57. Which of the following acids has the weakest conjugate base?

- A. HIO_3
- B. HNO_2
- C. H_3PO_4
- D. CH_3COOH

Ans.A

58. Which of the following 1.0 M salt solutions will be acidic?

- A. NaNO_3
- B. NaHCO_3
- C. NaHSO_4
- D. NaHPO_4

Ans.C

59. The pH at which an indicator changes colour is known as its

- A. Standard point.
- B. Transition point.
- C. Equivalence point.
- D. Stoichiometric point.

Ans.B

60. A buffer solution can be prepared by dissolving equal moles of

- A. A weak base and a strong base.
- B. A weak acid and its conjugate base.
- C. A strong base and its conjugate acid.
- D. A strong acid and its conjugate base.

Ans. B

61. A Bronsted-Lowry acid is defined as a substance that

- A. releases
- B. releases OH^- (aq)
- C. accepts a proton
- D. donates a proton

Ans.D

62. A chemical indicator in solution consists of

- A. A weak acid and its conjugate acid.
- B. A weak acid and its conjugate base.

- C. A strong acid and its conjugate acid.
- D. A strong acid and its conjugate base.

Ans.C

63. Which is the conjugate base of H_2PO_4^- ?

- A. OH^-
- B. PO_4^{3-}
- C. HPO_4^{2-}
- D. H_3PO_4

Ans.B

64. What do a chemical indicator and a buffer solution typically both contain?

- A. a strong acid and its conjugate acid
- B. a strong acid and its conjugate base
- C. a weak acid and its conjugate acid
- D. a weak acid and its conjugate base

Ans.D

65. Non aqueous titration is carried out for

- A. Water insoluble drug
- B. Weakly acidic drug
- C. Weakly basic drug
- D. All the above

Ans. D

66. Which one is aprotic solvent?

- A. Chloroform
- B. Benzene
- C. Both
- D. None

Ans. B

67. Protogenic solvent is

- A. Sulphuric acid
- B. Hydrochloric acid
- C. Nitric acid
- D. All the above

Ans. D

68. Protophilic solvent is

- A. Sodium hydroxide

- B. Lithium methoxide
- C. Sodium methoxide
- D. All

Ans. D

69. Which one is useful in non aqueous titration?

- A. Leveling solvent
- B. Differentiating solvent
- C. Both
- D. None

Ans. A

70. 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

Ans.C

71. In the preparation of the 0.1 (N) perchloric acid amount of acetic anhydride should be optimum. Why?

- A. If added more quantity then amine drug may acetylate and causes erroneous result
- B. If added less quantity then water may interfere with the titration,
- C. Formation of acetyl perchlorate can cause explosion
- D. All

Ans.B

72. Perchloric acid can be standardized by using

- A. Benzoic acid
- B. Oxalic acid
- C. Potassium hydrogen phthalate
- D. Tartaric acid

Ans.C

73. Which one is used as indicator for non aqueous titration?

- A. Crystal violet
- B. Thymol blue
- C. Oracet blue B
- D. All

Ans.A

74. Potentiometric titration is used in nonaqueous titration, when

- A. Colour of the solution is high
- B. Colour of the solution is low
- C. Both
- D. None

Ans.C

75. Sodium Acetate, $\text{NaC}_2\text{H}_3\text{O}_2$, is a water soluble salt that forms an aqueous solution that is

- A. Acidic
- B. Basic
- C. Neutral

Ans.B

76. All the compounds given can be assayed by NAT except

- A. Piperazine citrate
- B. Diethylcarbamazine
- C. Niclosamide
- D. Metrifonate

Ans.D

77. Example for amphiprotic solvent

- A. Methanol
- B. Glacial acetic acid
- C. Water
- D. All of the above
- E. None of the above

Ans.D

78. Nature of amphiprotic solvent

- P) Acts as a base in strong acidic environment
 - Q) Acts as an acid in strong basic environment
 - R) Acts as a base in weak basic environment
 - S) Neutral in nature
- A. P,R
 - B. P,S
 - C. Q,R
 - D. P,Q

Ans.D

79. Principle involved in non aqueous titration of weakly basic drug

- A. Proton donation from acetic acid to drug
- B. Proton donation from onium ion to acetic acid
- C. Proton donation from perchloric acid to acetic acid
- D. All of the above

Ans.D

80. AgCl has to be filtered off before titration using

- A. Modified Volhard's method
- B. Mohr's method
- C. Fajan's method
- D. None of the above

Ans.A

81. The adsorption indicator in Fajan's method has to be;

- A. Of the same charge as titrant
- B. Of the opposite charge as titrant
- C. Has no charge.

Ans.A

82. Titrations based on the use of silver nitrate are called

- A. Argentometric
- B. Complexometric
- C. Amperometric
- D. Conductometric

Ans.A

83. Adsorption indicators are used in

- A. Fajan's method
- B. Mohr's method
- C. Volhard's method
- D. All

Ans.A

84. Which method follows the principle of formation of coloured precipitate at the end point?

- A. Fajan's method
- B. Volhard's method
- C. Modified Volhard's method
- D. All

Ans.D

85. In Which method, ferric ammonium sulphate is used as an indicator?

- A. Fajan s method
- B. Mohr's method
- C. Volhard's method
- D. None

Ans.B

86. Potassium chromate (K_2CrO_4) is used as an indicator in

- A. Mohr's method
- B. Volhard's method
- C. Fajan's method
- D. None

Ans.A

87. Which of the following is an example of adsorption indicators?

- A. Eosin
- B. Phenolphthalein
- C. Methyl red
- D. Ninhydrin

Ans.A

88. Which method is used in water analysis

- A. Fajan's method
- B. Mohr's method
- C. Volhard's method
- D. None

Ans. B

89. EDTA has _____ binding sites and therefore it is also called as multidentate ligand.

- A. Six
- B. Five
- C. Four
- D. Seven

Ans.C

90. _____ agent forms the complex with the metal ions that are not required in the estimation

- A. Masking
- B. Demasking

C. Both

Ans.B

91. The endpoint for an EDTA titration is usually found by using a indicator

A. Metallochromic

B. Redox

C. Acid base

D. All

Ans.A

92. Which one is polydentate

A. Ethylene diamine

B. EDTA

C. Both

D. None

Ans.C

93. Which one is sequestering agent?

A. Salicylaldoxime

B. 8-hydroxy quinoline

C. EDTA

D. All

Ans.C

94. The complexometric titration where EDTA is used carried out at basic pH. Why?

A. For the stability of complex formed

B. Reaction rate is optimum in basic pH

C. There is less number of side reaction

D. All

Ans.D

95. Which is used as masking agent for lead in complexometric titration?

A. Sod. Sulphide

B. Oxalate

C. Thiocetanaide

D. All

Ans.C

96. Dimercaprol is used as complexing agent for complexion of

A. Mercury

- B. Arsenic
- C. Lead
- D. All

Ans.D

97. Indicator used in complexometric titration is

- A. Erichrome black T
- E- Xylenolorange
- C. Mordant black II
- D. All

Ans.D

98. Name the assay method for the drug calcium gluconate

- A. Non aq titration
- B. Acid base titration
- C. Complexometric
- D. Iodometric

Ans.C

99. Number of rings observed in the tetravalent ion EDTA complex

- A. 4
- B. 5
- C. 6
- D. 3

Ans.B

100. Following are properties of good precipitate except:

- A. Easily filtered and washed free of contamination.
- B. Significant loss of the analyte occurs during filtration and washing.
- C. Unreactive with constituents of the atmosphere.
- D. both a and b

Ans.B

101. In _____, analyte is separated from a solution of the sample as a precipitate and is converted into a compound of known composition

- A. Volatilization gravimetry
- B. Precipitation gravimetry
- C. Electrogravimetry
- D. Precipitation point

Ans.B

102. _____ is the weight of analyte per unit weight of the precipitate.

- A. Gravimetric factor
- B. Precipitation factor
- C. Electrogravimetry factor
- D. None of the above

Ans.A

103. Digestion of precipitate also known as

- A. Ageing
- B. Gravimetric factor
- C. Co - precipitation
- D. Ostwald ripening

Ans.D

104. SI unit of conductance is

- A. Mho
- B. Seimens
- C. Volt
- D. None of the above

Ans.B

105. Current used for measured of conductance is

- A. A.C
- B. D.C
- C. Both A and B
- D. None of these

Ans.A

106. Hydrogen and Hydroxyl ions are potent_____

- A. Conductivity
- B. Molar conductance
- C. Conductance Enhancers
- D. None of the above

Ans.C

107. _____ is the product of specific conductance and volume of electrolyte

- A. Conductivity
- B. Molar conductance
- C. Conductance Enhancers

D. None of the above

Ans.B

108. _____ is the conductance offered by 1 cm^3 of an electrolytic solution

- A. Molar conductance
- B. Conductance Enhancers
- C. Specific conductance
- D. Specific Resistance

Ans.C

109. Potentiometry is an _____ method of analysis

- A. Spectroscopic
- B. Electrometric
- C. Analytical
- D. None of the above

Ans.B

110. Example for reference electrode except

- A. Antimony electrode
- B. Silver-silver electrode
- C. Calomel electrode
- D. None of the above

Ans.A

111. The indicator used in estimation of hardness of water by potentiometry

- A. PH
- B. PM
- C. Both a and b
- D. None of the above

Ans.B

112. Which of the following two are used reference electrodes in potentiometry?

- P) Glass membrane
 - Q) Hg-calomel
 - R) Ag-silver chloride
 - S) Ion selective
- A)P,Q B)P,S C)Q,R D)P,R

Ans.C

Hydrogen electrode can be used as

- A. Indicator electrode
- B. Reference electrode
- C. Secondary reference electrode
- D. Both A and b

Ans.D

113. _____electrode is employed as a secondary reference electrode

- A. Hydrogen electrode
- B. Dropping Mercury Electrode
- C. Calomel electrode
- D. None of the above

Ans.C

114. Each electrochemical cell is composed of

- A. Two half cells
- B. Half cells
- C. Both A and B
- D. None of the above

Ans.A

115. An electrode, whose electrode potential is well known and stable is a

- A. Indicator electrode
- B. Reference electrode
- C. Both A and B
- D. None of the above

Ans.B

116. In polarography, when limiting current is achieved, one of the following process takes place. Choose that.

- A-The rate of electron transfer just matches the rate of mass transfer
- B. The rate of electron transfer is slower than the rate of mass transfer
- C. The rate of electron transfer becomes independent of the rate of mass transfer
- D. The rate of electron transfer far exceeds the rate of mass transfer

Ans.B

117. Which of the following is used as indicator electrode in polarography?

- A. Glass
- B. Dropping mercury
- C. Platinum
- D. Silver

Ans.B

118. For Qualitative analysis by polarography, characteristic parameter used is

- A. Diffusion current
- B. Half wave potential
- C. Voltage
- D. None of the above

Ans.B

119. Limiting current is sum of diffusion current and

- A. Residual current
- B. Faradic current
- C. Migration current
- D. Additional current

Ans.B

120. Gradual rising in current in polarography is called

- A. Weak current
- R Higher current
- C Migration Current
- D. Residual current

Ans.D

121. Reason for generation of migration current in polarogram is

- A. Migration and diffusion of charged particles
- B. Migration of charged particles
- C. Diffusion of charged particle
- D. None of the above

Ans.A

122. The D and L isomeric forms can be distinguished by

- A. Polarimetry
- B. Refractometry
- C. Potentiometry
- D. Conductometry

Ans.A

123. Sodium vapor lamp used in Polarimeter emit light of wavelength (in Angstrom)

- A. 5890 & 5896
- B. 4368 & 4916

C 5770 & 5791

D.5461 & 4368

Ans.A

124. Oxidation involves

- A. loss of hydrogen
- B. loss of oxygen
- C. gain in hydrogen
- D. gain in electrons

Ans.A

125. In a reaction between $\text{CuSO}_4(\text{aq})$ and $\text{Zn}(\text{aq})$

- A. Zinc experiences an increase in the oxidation state
- B. undergoes oxidation
- C. Zinc undergoes oxidation
- D. all of these

Ans.D

126. Oxidizing agents

- A. are mostly non-metals
- B. are mostly metals
- C. decrease in oxidation state
- D. are mostly transition metals

Ans.A

127. Upon oxidation of acidified potassium manganate (VII), the purple color of Manganese

- A. stays
- B. changes to pink
- C. becomes colorless
- D. becomes blue

Ans.C

128. Hydrogen acts as a reducing agent,

- A. by taking oxygen
- B. by giving electron
- C. by taking hydrogen
- D. Both A and B

Ans.D

129. Reduction involves

- A. loss of oxygen
- B. gain in hydrogen
- C. gain in oxygen
- D. loss of electrons

Ans.A

130. Oxidizing agents does not include

- A. potassium iodide
- B. potassium manganate
- C. potassium dichromate
- D. bromine solutions

Ans.A