



Sabarmati University
(Formerly, Calorx Teachers' University)
SCHOOL OF PHARMACY

B.Pharm IstSemester Final Theory Examination April 2021

Subject & Code: Pharmaceutical Analysis – I (BP102T)

Total

Marks:80

Date:10/05/2021

Time: 3hrs

Instruction:

- 1) Attempt all questions in each section
- 2) Figures on right side indicate the marks
- 3) Scan and upload both the section/s separately
- 4) 3 hrs for writing paper and extra 1 hr is for question paper downloading and paper uploading.

Section I

(40 Marks)

Question 1: Attempt all the questions (Compulsory)

(1x40=40)

1. Which of these is not a true statement?
 - a) All Lewis bases are also Bronsted-Lowry bases.
 - b) All Lewis acids contain hydrogen.
 - c) All Bronsted-Lowry acids contain hydrogen.
 - d) All Lewis acids are electron deficient.
2. Which is a protic solvent.
 - a) CCl_4
 - b) HCCl_3
 - c) CH_3OH
 - d) $\text{CH}_3(\text{CH}_2)_4\text{CH}_3$
3. Which of the following classes of substances cannot be used as protic solvents.
 - a) Esters
 - b) Aldehydes
 - c) Ketones
 - d) Carboxylic acids
4. Which of these is not a true statement?
 - a) The stronger the acid, the larger is its pKa
 - b) The conjugate base of the strong acid is a strong base.
 - c) Acid-base reactions always favor the formation of the stronger acid and the stronger base.
 - d) Strong acids can have negative pka values.
5. Which of these is not a diprotic acid?
 - a) H_2S
 - b) H_2SO_4
 - c) H_2O
 - d) $(\text{COOH})_2$
6. For a gravimetric analysis to be useful
 - (a) The anion of the substance being investigated must be precipitated.
 - (b) The ratio of anion to cation in the substance being investigated must be 1:1
 - (c) Both the cation and the anion of the substance being investigated must be precipitated.

- (d) Either the cation or the anion of the substance being investigated must be precipitated.
7. Magnesium chloride and silver nitrate solutions are mixed. Given that a precipitation reaction occurs, the precipitate is likely to be
(a) AgNO_3 (b) $\text{Mg}(\text{NO}_3)_2$ (c) MgCl_2 (d) AgCl
8. Sodium nitrate, NaNO_3 cannot be analysed gravimetrically because
(a) Sodium nitrate is an inert substance
(b) Sodium nitrate is insoluble
(c) All compounds containing sodium ions or nitrate ions are soluble.
(d) The stability of sodium nitrate is very low.
9. Which of the following is not a property required of the substance chosen for use as a precipitate in a gravimetric analysis.
(a) Has known formula
(b) Stable when heated to 110°C
(c) Low solubility
(d) Able to be stored for an extended time without deterioration
10. The principle of argentometric titration is
(a) AgCl is used as titrant
(b) AgNO_3 is used as titrant
(c) AgSO_4 is used as titrant
(d) $\text{Ag}(\text{OH})_2$ is used as titrant
11. Glacial acetic acid is an example of
(a) Protogenic solvent
(b) Protophillic solvent
(c) Amphiprotic solvent
(d) Aprotic solvent
12. Reagent used in diazotization titration is
(a) Potassium dichromate
(b) Sodium nitrate in HCL
(c) Silver nitrate and sodium chloride
(d) Potassium thiocyanate
13. Which of the following is pH independent redox indicator?
(a) Methylene Blue
(b) Safranin T
(c) Neutral Red
(d) 2, 2'-bipyridine
14. In gravimetric analysis, the process of dissolution of small particles and reprecipitation known as
(a) Precipitation (b) Peptization (c) Post-Precipitation (d) Digestion
15. Nitrogen content in proteins can be estimated by
(a) Kjeldahl method
(b) Iodometry
(c) Gasometry
(d) Thermogravimetry

16. Which of the following titration is used for barium sulphate?
 a) Precipitation titration
 b) Gravimetric titration
 c) Redox titration
 d) Non Aqueous titration
17. Ionic product of water is?
 a) 1.0×10^{-14} b) 1.0×10^{-12} c) 1.0×10^{-10} d) 1.0×10^{-8}
18. Find correct statements. [P] Aprotic solvents are neutral and chemically inert substances. [Q] Aprotic solvents have a low dielectric constant. [R] Aprotic solvents do not react with either acids or bases. [S] Aprotic solvents do not favor ionization.
 a) P, Q b) R, S c) Q, R, S d) P, Q, R, S
19. Determination of halogens and sulfur in organic compounds can be done by
 (a) Kjeldahl method
 (b) Oxygen combustion flask method
 (c) Gasometry
 (d) Thermogravimetry
20. When one mole of solute dissolved in kilogram of solvent, the term is known as
 a) Molarity b) Normality c) Molality d) Formality
21. In Polarography, at Half wave potential one of the following statement is correct
 a) The concentration of oxidant and reductant species is equal
 b) The concentration of oxidant and reductant species is zero
 c) The concentration of oxidant is greater than reductant
 d) The concentration of oxidant is less than reductant
22. In Polarography, Half wave potential is the measure of qualitative analysis. It is the potential at point on polarographic wave where the current is one half of the
 a) Faradic Current b) Diffusion current
 c) Migration current d) Residual current
23. Which one of the following methods used for quantitative analysis in polarography?
 a) Direct comparison method b) Calibration curve method
 c) Internal standard method d) All of these
24. Which of the following is not ion selective electrode?
 a) Glass membrane electrode b) Liquid electrode
 c) Crystal membrane electrode d) Hydrogen electrode
25. Gran's plot is used in
 a) Polarography b) Potentiometry c) Conductometry d) Polarimetry
26. Gran's plot is plot of
 a) Electrode potential against volume
 b) Concentration of sample remaining at each point in the titration against volume
 c) pH of solution against volume
 d) Concentration of sample titrated at each point in the titration against volume

27. Which of the following electrode used in conductometer?
 a) Hydrogen electrode b) Platinum electrode
 c) Calomel electrode d) Glass electrode
28. Which of the following titrations are not possible by conductometry?
 a) Acid base titration b) Precipitation titrations
 c) Redox titrations d) Complex formation titrations
29. Which of the following ion shows maximum conductance at 25°C
 a) H⁺ b) OH⁻ c) Na⁺ d) K⁺
30. Which of the following statement is incorrect
 a) Specific conductance is the standard unit of conductance.
 b) Specific conductance is the reciprocal of resistance of 1cm cube of a solution
 c) Specific conductance decreases with dilution of solution
 d) Specific conductance is not depend on numbers of ions present in solution.
31. Which one of the care should be taken during the use of DME?
 a) Tip of DME should be always dipped in water when not in use
 b) Only pure, double or triple distilled mercury should be used.
 c) There should be sufficient mercury in reservoir so that pressure change is negligible.
 d) All of these
32. Tip of the DME should be cleaned by immersing periodically in.
 a) water b) 50% v/v nitric acid
 c) 0.1 M HCL d) 0.1 M NaOH
33. The graph obtained in polarography is
 a) Current v/s potential b) Current v/s time
 c) Potential v/s time d) Potential v/s volume
34. Quantitative analysis in polarography is based on
 a) Diffusion Current b) Diffusion coefficient
 c) Half wave potential d) Wave heights
35. Residual current is the sum of
 a) Capacitance current and faradic current
 b) Capacitance current and diffusional current
 c) Diffusional current and faradic current
 d) Diffusional, faradic and capacitance current
36. Which of the following is current should always be subtracted in polarography?
 a) Residual current b) Diffusional Current
 c) Both A and B d) None of the above
37. Faradic current is due to
 a) Reducible impurities present in solution
 b) Non-Reducible impurities present in solution
 c) Charge of mercury drop falling form DME
 d) Formation of double Helmholtz layer
38. Which of the following is indicator electrode in polarography?
 a) Quinhydrone electrode b) Dropping mercury electrode

c) Calomel electrode

d) Normal Hydrogen electrode

39. Find correct statements about Polarography

a) The reaction occurs at surface of DME

b) DME is considered to be polarized

c) After reaction DME becomes depolarized electrode

d) All of the above

40. Ilkovic equation is related to

a) Conductometry

b) Polarography

c) Amperometry

d) Potentiometry

Section II

(40 Marks)

Question 2: Attempt any eight questions

(5x8=40)

1. Define Pharmaceutical analysis and its give its scope.
2. Explain method of expressing concentration.
3. Explain in detail theories acid base titration.
4. What are buffer solutions.
5. Define Precipitation titration and note on Mohrs method.
6. Explain co-precipitation and post precipitation.
7. Explain in detail redox titration.
8. Define conductometry and give its principle
9. Give principle of polarography
10. Explain construction and working of dropping mercury electrode.

***** ALL THE BEST *****