# DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
## LONERE – RAIGAD -402 103
## Winter SemesterExamination, December - 2018

**Branch: B. Pharmacy** **Sem.:-III**

**Subject with Subject Code: Physical Pharmaceutics-I (BP302T)** **Marks:75**

**Date: 20/12/2018** **Time:-3 Hrs.**

**Instructions to the Students**

*1. All questions are compulsory*
*2. Neat labelled diagram must be drawn wherever necessary*
*3. Figures to the right ndicate full marks*

**Q. No. 1. Attempt following Multiple Choice Questions (MCQs) (20x 1= 20)**

1. In the pH titration curves of Glycine-Cupric complex, sudden increase in the pH is observed. It indicates that:
   A. Complex is dissociated
   B. Lower complex turns to higher complex
   C. $H^+$ ions stopped reacting with $(OH^-)$ ions
   D. $[OH^-]$ ions is not participated in the complex formation

2. Number of Moles of solute per kilogram of solvent is called.....
   A. Molarity B. Molality C. Normality D.Formality

3. The pH of pharmaceutical buffer system can be calculated by
   A. pH partition theory B. Noyeswhitney law
   C. Henderson-Hasselbaltch equation D. MichalisMenten Equations

4. The Dielectric constant (ε) value of water is .....
   A. 1 B. 80 C. 100 D. 273

5. The unit of R, the gas constant is
   A. erg $K^{-1}$ $mol^{-1}$ B. cal $K^{-1}$ $mol^{-1}$ C. joule $K^{-1}$ $mol^{-1}$ D. All of these

6. Joule Thomson effect describes gases'
   A. Contraction B. Sudden Expansion C. Expansion D. Relaxion

7. A gas law giving the relationship between volume & pressure is obtained from
   A. Daltons law B. Boyles Law C. Charles law D. Grahams law

8. The Henry law is applicable if
   A. The temperature & Pressure are moderate
   B. The solubility of gas in the solvent is low
   C. The gas does not react with the solvent to form a new species
   D. All of the above


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9. The process in which the solid changes directly into vapors without changing in liquid state is called....
A. Condensation B. Evaporation C Boiling D. Sublimation

10. When $CO_2$ is dissolved in water, what is the nature of the solution?
A. Acidic B. Basic C. Neutral D. Unrelated

11. If an animal cell is placed in HYPERTONIC solution, what happens to the cell?
A. Cell swells and bursts B. Shrinks from water loss
C. Nothing happens D. Solute moves in and out

12. PolyoxyethyleneSorbitanMonooleate is also known as.....
A. Tween 20 B. Tween 80 C. Span 20 D. Span 80

13. The HLB range for Lipophilic surfactant is.....
A. 2-9 B. 9-16 C. 16-20 D. above 20

14. Partial vapour pressure of a solution component is directly proportional to its mole fraction. This statement is known as.
A. Henry's Law B. Raoult's Law
C. Ostwald dilution Law D. Distribution Law

15. Ethylene diaminetetraacetic acid (EDTA) is an example of ligand type
A. Unidentate B. Bidentate C. Tetradentate D. Hexadentate

16. Which one of following has acidic pH?
A. Blood B. Intenstinal fluids C. Orange Juice D. Saliva.

17. Solutions which shows positive or negative deviation from Raoult's law are called
A. Ideal Solution B. True Solutions
C. Non-ideal solutions D. Homogeneous solution

18. For Tetragonal crystal system, which of the following is not TRUE?
A. $a = b \neq c$ B. $\alpha = \beta = \gamma = 90^0$ C. $a \neq b \neq c$ D. None of These

19. Buffers are mixture of:
A. Strong acid & strong base B. Weak acid & their conjugate base
C. Strong acid & weak base D. Weak base & their conjugate acid

20. At critical temperature, the surface tension of a liquid ....
A. is Zero C. same as that at any other temperature
B. is Infinity D. Can not be determined

**Q. No. 2: Solve any TWO from following questions (2x 10 = 20)**

A. Explain the term Solubility & Solutions. Discuss the effect of temperature, solvents, pH and surfactants on solubility of solids in liquids with suitable examples.

B. What is Adsorption? What are application of Adsorption to pharmacy? Explain in detail Freundlich and Langmuir's adsorption Isotherm.

C. Define and Classify complexes. Explain Organic molecular complexes in detail.

**Q. No. 3: Solve any SEVEN from following questions** **(7x 05 = 20)**

A. Define the terms:
   i) Critical Temperature, ii) Critical Solution Temperature,
   iii) Adsorption Isotherm iv) Critical Micelle concentration,
   v) Glass transition Temperature

B. What is Nernst distribution law? Explain its limitation and applications.

C. What are Aerosols? Explain the principle involved in the two phase system aerosols.

D. Define polymorphism. Give different applications of polymorphism with suitable examples.

E. What is refractive index & its applications? Explain the method to determine refractive index.

F. Define Surface & Interfacial Tension & Explain DuNouy Ring method for measuring Surface & Interfacial tension in detail.

G. Derive an equation for drawing the Scatchard plot for drug-protein binding studies.

H. What are Buffered Isotonic solutions? Discuss buffers in Pharmaceutical Systems & Biological Systems.

I. What is Sorensen's pH scale? Describe the principle and experimental procedure for pH determination by electrometric method.