

KATHMANDU UNIVERSITY
End Semester Examination [C]
June 2018

Mark Scored:

Level : B. Pharm.
Year : III

Course : PHAR 301
Semester: I

Exam Roll No.:

Time: 30 mins.

F.M. : 20

Registration No.:

Date :

JUN 10 2018

SECTION "A"

[20 Q.×1=20 marks]

Check (✓) the correct answer of the following multiple-choice questions.

- Which of the following statement is **NOT TRUE**?
[a] Degree of freedom increases with increase in the number of components.
[b] Tie line is always parallel to the base line.
[c] Nicotine and water shows lower consolute temperature
[d] Degree of freedom for 3 component systems containing only one phase is 4.
- Ionic strength of a 1:2 electrolyte such as Na_2SO_4 is times the molar concentration
[a] same [b] two [c] three [d] four
- For maximum buffer capacity pH of buffer must be pKa value of weak acid.
[a] higher than [b] equal to [c] less than [d] very high than
- Change in pH on diluting the buffer solution to one half of its original strength is
[a] Buffer capacity [b] Buffer strength
[c] Dilution value [d] Dilution strength
- The phenomena in which a solute is more soluble in a mixture of solvents than in one solvent alone is.....
[a] Solvation [b] Dissolution [c] Mixing [d] Cosolvency
- Which of the following reaction will complete first?
[a] Zero order [b] First order
[c] Second order [d] All at the same time
- Surfactant with HLB value between 8 to 16 is suitable for its use as
[a] Solubilizing agent [c] O/W emulsifying agents
[b] Detergents [d] W/O emulsifying agents
- is a surfactant that, when dissolved in water lowers the advancing contact angle.
[a] Wetting agent [c] Emulsifying agent
[b] Detergent [d] Preservative
- is the temperature at which solubility of surfactant equals critical micelle concentration.
[a] Eutectic point [c] Kraft point
[b] Triple point [d] Cloud point
- In Colloidal disperse system, dispersed particles are in the size range of
[a] less than $1 \mu\text{m}$ [c] greater than $0.5 \mu\text{m}$
[b] $0.5 \mu\text{m}$ to $1 \mu\text{m}$ [d] none of the above

11. The potential difference between compact and diffusion layer is.....

[a] Zeta-potential	[c] Surface tension
[b] Nerst potential	[d] Interfacial tension

12. Porosity of powder bed having uniform size spherical particle is

[a] 26%	[c] between 26 to 48%
[b] 48%	[d] less than 26%

13. Total porosity of 0.3439g tablet, 0.0963 cm³ bulk volume and 3.667 g/cm³ true density is

[a] 2.6%	[c] 4.8%
[b] 0.026%	[d] None

14. Viscosity of substances showing decreased with increase in rate of shear.

[a] Newtonian flow	[c] Dilatant flow
[b] Pseudoplastic flow	[d] Psychorheology

15. property is desired in intramuscular depot preparation.

[a] Newtonian flow	[c] thixotropy with shear thickening
[b] thixotropy with shear thinning	[d] Shear thinning

16. Plastic flow is observed in system containing concentration of particles.

[a] High, flocculated	[c] High, deflocculated
[b] Low, flocculated	[d] Low, deflocculated

17. Chemical bonds are not involved in complexes.

[a] Polymer	[c] Chelates
[b] Clathrates	[d] Monomolecular inclusion

18. Starch-iodine is an example of type of inclusion complex.

[a] Channel lattice	[c] Clathrates
[b] Layer	[d] Molecular sieves

19. Alfa-acid glycoprotein preferably binds..... drugs.

[a] Acidic	[c] Neutral
[b] Basic	[d] None of the above

20. Mole fraction of solute in a solution with 0.2 mole solute and 0.6 mole solvent is.....

[a] 0.33	[c] 0.2
[b] 0.75	[d] 0.25

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Year : III
Time : 2 hrs. 30 mins.

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F.M. : 55

SECTION "B"
[5 Q.×3=15 marks]

Answer *ANY FIVE* questions of the following:

1. Mention the factors that affects solubility of gases in liquid. Explain salting out phenomena.
2. Calculate the ionic strength of aqueous solution containing 0.01 M KCl, 0.02 M BaSO₄ and 0.03 M Na₂SO₄.
3. A reaction proceeds through first order kinetics with half-life of 25 minutes. Calculate the percent of the initial concentration that remains after 1 hour?
4. Write short note on association colloids?
5. What is angle of repose? How can you improve angle of repose for given bulk of powder?
6. Write short note on 'Surfactant as emulsifying agent'.
7. Explain pH partition hypothesis.

SECTION "B"
[5 Q.×5=25 marks]

Answer *ANY FIVE* questions of the following:

8. A 600 g mixture of partially miscible compound X and water has a total composition of 40% w/w of compound X at 45°C. At that temperature the two conjugate phases have the respective composition of 70% and 40% w/w of water. Calculate the weight of the aqueous and the compound X layer in the mixture and the weight of compound X in each layer.
9. What are the different methods that can be used for adjusting tonicity and pH of pharmaceutical solution. Write in detail about 'Sodium Chloride equivalent method'.
10. What is Hydrophile-Lipophile Balance scale? Write about its application.
11. Write short note on 'Electrical properties at colloid interface'.
12. Write about the working procedure and applications of Cup-Bob viscometer.
13. How can you use 'Method of continuous variation' for determination of the stoichiometric ration of ligand-to-metal or donor-to-acceptor complex formation? Explain with examples.
14. Explain 'Dynamic Dialysis' method for determination of drug-protein binding.

SECTION "C"
[2 Q.×7.5=15 marks]

Answer *ANY TWO* questions of the following:

15. Explain working principal and procedure for particle size distribution using Coulter counter method.
16. Write about different types of non-Newtonian fluids. What is thixotropy? Discuss on the benefits of thixotropic property in pharmaceuticals preparations with appropriate examples.
17. What is the difference between Rate, Order and Molecularity of reactions? Write in detail about the methods used for determination of Order of reactions.