KATHMANDU UNIVERSITY
End Semester Examination
February/March, 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 : MAR 13 2018

SECTION "A"

[20 Q.×1=20 marks]

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

1. Activity coefficient of strong electrolyte depends on.....
   [a] Total ionic strength
   [b] Valence of ions
   [c] Temperature
   [d] All of the above

2. If the material added to the mixture of two partially miscible liquids is soluble in only one of them then
   [a] Upper consolute temperature increases
   [b] Upper consolute temperature decreases
   [c] No change in consolute temperature
   [d] Lower consolute temperature increases

3. Addition of 0.5mole base to the buffered solution changes its pH from 3.0 to 4.0. What is the buffer capacity of the buffer?
   [a] 2.0 [b] 0.125 [c] 0.5 [d] 0.167

4. Which of the following statement is FALSE?
   [a] Drug should be buffered at low buffer capacity for physiologic effect.
   [b] Solutions having equal osmotic pressure are always isotonic.
   [c] Buffer capacity is not a constant value.
   [d] Maximum buffer capacity depends on total buffer concentration.

5. ..... release formulations releases drug at a time other than immediately following administration.
   [a] Modified [b] Extended [c] Controlled [d] Pulsatile

6. If two reactants have similar charge, rate of reaction will.....
   [a] Increase with increase in dielectric constant
   [b] Decrease with increase in dielectric constant
   [c] Be independent of ionic strength
   [d] Both [a] and [c]

7. Certain reaction is occuring with the rate constant of 7.35×10^{-5} day^{-1} at 313K. What will be the rate constant at 298K? The activation energy for drug decomposition is 74.7×10^{3} J/mol and the universal gas constant is 8.314 $Jmol^{-1} K^{-1}$.
   [a] 7.35×10^{-5} sec^{-1}
   [b] 3.67×10^{-5} sec^{-1}
   [c] 2.67×10^{-6} day^{-1}
   [d] 1.74×10^{-5} day^{-1}

8. Which one among the given complexes is the most stable?
   [a] Complex with monodentate ligand
   [b] Chelate
   [c] Organic complex
   [d] Donor acceptor complex

9. Which of the following statement regarding equillibrium dialysis is FALSE?
[a] It is most commonly used.
[b] It is more susceptible to experimental error
[c] Time consuming
[d] Not suitable for unstable compound

10. Steady state is said to be achieved when.....
[a] Concentration on both donor and receptor compartment is same.
[b] Rate of change of concentration is constant.
[c] Concentration gradient is constant.
[d] Both [b] and [c]

11. Which of the following statements is NOT true in relation to phase diagram of water?
[a] Degree of freedom at triple point of water is 0
[b] There is more than one critical temperature
[c] There is more than one melting temperature
[d] The number of component at triple point is 1

12. Degree of freedom for a non-condensed system containing three components but only one phase is.....
[a] 1 [b] 2 [c] 3 [d] 4

13. At critical temperature, the surface tension of a liquid is.....
[a] zero [b] variable
[c] maximum [d] pressure dependent

14. When the angle of contact between a solid and a liquid is 90°, then cohesive force.....
[a] >Adhesive force [c] = Adhesive force
[b] < Adhesive force [d] >>Adhesive force

15. Addition of alcohol to the hydrophilic colloid leads to
[a] hydration [c] precipitation
[b] crystallization [d] stabilization

16. What is the kinematic viscosity of a liquid that has a density of 1.2 g cm-3 and a dynamic viscosity of 2 cP?
[a] 0.6 $m^2 s^{-1}$ [c] 0.6 $x10^{-6}$ $m^2 s^{-1}$
[b] 1.67 $m^2 s^{-1}$ [d] 1.67 $x10^{-6}$ $m^2 s^{-1}$

17. Greater the thixotropy, ... is the physical stability of suspension.
[a] equal [c] higher
[b] lower [d] first higher than lower

18. Type of flow in which viscosity increases when substance is agitated is
[a] plastic [c] dilatant
[b] pseudoplastic [d] Thixotrophy

19. Temperature at which the solubility of surfactant is equal to CMC is
[a] eutectic point [c] kraft point
[b] bubble point [d] upper consolute temperature

20. Andreasen Apparatus works under the principle of
[a] Microscopy [c] Sieving
[b] Sedimentation [d] All of above

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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. Explain the effect of pressure on solubility of gases in liquid based on Henry's law.

2. "Buffer capacity is not a constant value." Explain.

3. Classify complexes and write down the significant property of each class.

4. If your drug is found to be released from the tablet following Higuchi Model, explain what type of tablet has been formed and how is release occurring? Explain factors that will influence release in this case.

5. Write about the pharmaceutical applications of surfactants.

6. What are association colloid? How is it prepared?

7. Write down the reasons for poor flow property of powder. How can you improve it?

SECTION "C"
[5 Q. × 5=25 marks]

Answer *ANY FIVE* questions of the following:

8. How will you render 100ml solution containing 2 gm of atropine sulphate isotonic with body fluid by White Vincent and Sodium chloride equivalent method? (E=0.13)

9. Define temperature coefficient. By what factor the rate of degradation will increase if a drug in a suspension is stored at 75^0C instead of room temperature around 25^0C?

10. Give a detail account of monomolecular inclusion compounds including their applications.

11. How are drugs classified according to BCS classification? Explain about the factors influencing dissolution.

12. The mixture of phenol and water at 30°C, has a total composition of 55 % phenol as read from the horizontal axis of the diagram. The two conjugate phases have the respective composition of 15 and 75 % phenol. What is the weight of the aqueous layer and of the phenol layer in 600 grams of the mixture and how many grams of phenol are present in each of the 2 layers?

13. Explain DuNouy Ring method for determination of interfacial tension.

14. How can you improve physical stability of lyophobic colloidal dispersion system? Justify your answer with the help of DLVO Theory.

SECTION "D"

[2 Q.×7.5=15 marks]

Answer *ANY TWO* questions of the following:

15. Write short notes on:
    [a] Complex reactions [3]
    [b] Apparent Zero Order Reaction [3]
    [c] Significance of Michelis-Menten constant [1.5]

16. Prepare a list of methods that are widely used for determining particle size in pharmaceutical practice. Explain working principle and procedure for any one.

17. Explain different types of non-Newtonian flows with the help of suitable rheograms. What causes the materials to exhibit such flow property? Give your reasons.