

BPharmacy Second Year Second Semester Examination 2024

Physical Pharmaceutics II

Time: **Three hours**

Full Marks: **75**

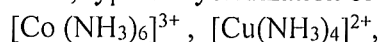
Answer any five questions taking at least one from each group.

Group A

- Q1. Write the 4 types of colloid classification and Write the Application of colloid. 10+5=15
Q2. Classify the properties of colloid. Write in details about **optical** and **kinetic** properties of colloid. 5+5+5=15
Q3. Short notes on (5X3=15)
a. CMC b. Protective colloid c. Stability of colloid d. Sedimentation of colloid
e. Stokes's law

Group B

- Q4. (a) Define complexation. Classify it. Provide electron distribution during hybridization, 3D structure, type of hybridization of the following complexes



1+2+3=6

- (b) Provide example the use of chelate in

- (i) the analysis of drug
(ii) Protecting drug in a formulation

2+2=4

- (c) Describe with example of complexation with

- (i) Donor-acceptor mechanism
(ii) Charge-transfer complex

2+2+4

- (d) How will you detect unpaired electron in a metal ion complex? (1)

- Q5. Give the significance of drug protein binding. Describe a method to determine drug protein binding. Deduce equation of Klotz 's reciprocal plot. Write its advantages and disadvantages. Deduce the equation of Scatchard's plot. Write its advantages over Klotz's plot. 2+3+4+2+2+2= 15

Group C

- Q. 6. Answer any 3 of the following questions: 3x5=15

i) Importance of "particle size & the related surface area" in the field of pharmacy and medicine. "

ii) What measures may be taken for further improvement of flow properties of a powder-granule mix mass to compress into tablet or encapsulated into hard gelatin capsules.

[Turn over

iii) What are the characteristics of micro emulsions?

iv) Explain the three major theories of emulsifications.

Q. 7. Write short notes on any 3 of the following:

3×5=15

i) Preservation of an emulsion to prevent microbial growth.

ii) Mechanism involved in "Oswald ripening" related to dispersed systems & remedies to minimize it?

iii) Zeta potential & physical stability of dispersed systems.

iv) Mechanism involved in the determining micro particles' volume.

Group D

Q8. i) Why stability studies are necessary?

2+3+1+4+3+2=15

ii) Explain pseudo-first order reaction with example.

iii) What is first order reaction?

iv) Derive the expression for rate constant and half-life period for 1st order reaction.

v) The half-life of a drug that decomposes by first order is 55 days. Calculate rate constant and shelf-life.

vi) How suppression of solubility gives stabilization against hydrolysis?

Q9. i) Write about the physico-chemical factors influencing the chemical degradation of pharmaceutical product.

ii) A suspension shows zero order reaction kinetics with a rate constant of 2 mg/ml.month.

The dose of the suspension is 20 mg/ml. a) Calculate t_{90} . The drug solubility is 0.1 mg/ml. b)

What is the first order rate constant? Calculate half-life of zero order kinetics. 8+7 = 15