SVKM'S NMIMS

Shobhaben Pratapbhai Patel / School of Pharmacy & Technology Management

Programme: B. Pharm / B. Pharm + MBA **Year:** II **Semester:** III

Academic Year: 2019-20 **Marks:** 75

Subject: Physical Pharmaceutics I – Theory **Time:** 10.00 am to 1.00 pm

Date: 20 November 2019 **Duration:** 3 hrs.

FINAL EXAMINATION

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is provided for their use.

1) Question No. 1 is compulsory (10 questions of 2 marks each)

2) Question No. 2 will have 3 questions, 10 marks each (answer 2 out of 3)

3) Question No. 3 will have 9 questions, 5 marks each (answer 7 out of 9)

4) Candidates are requested to attempt all questions as specified above

5) Answer to new question to be started on fresh page

6) Figures in brackets on the right hand side indicate full marks

7) Assume Suitable data if necessary

Compulsory questions

Attempt all questions.

1 a	Enlist any four applications of complexation in pharmacy.	2
1 b	Draw a phase diagram for one component system.	2
1 c	Give the Henderson-Hasselbalch equation for a weak acid and weak base.	2
1 d	Give two examples of partially miscible liquids.	2
1 e	Define contact angle and give its relation to wetting.	2
1 f	Why Human serum albumin is considered as important protein for binding of drugs?	2
1 g	Among amorphous and crystalline form of drug which is more soluble in water and why?	2
1 h	Give the difference between Tweens and Spans.	2
1 i	Give a typical phase diagram for eutectic mixture.	2

1 j	How do kidneys maintain pH of urine?	2

Long Questions

Attempt any Two.

2 a	Define Critical Solution Temperature. Explain in detail the temperature-composition plot for a system of partially miscible liquids showing upper CST.	10
2 b	Enlist different physical properties of drugs. Explain the principle, method of analysis and applications of ANY ONE of them. Calculate specific rotation of a drug whose 5% solution under D-line of sodium vapor lamp gives optical rotation of +15.25° (Note: Tube length measure 1 decimeter).	10
2 c	Derive the equation which relates surface tension with pressure difference across a curved interface. Elaborate on the method utilized to determine interfacial tension which employs a platinum-iridium ring.	10

Short Questions

Attempt any Seven.

3 a	Discuss in detail the application of concept of partition coefficient in preventing microbial growth in an oil-in-water emulsion.	5
3 b	Give one application of buffers in pharmacy. Elaborate on buffer action of an acid buffer.	5
3 c	Define Complexes. Describe different types of inclusion complex with suitable examples.	5
3 d	What is relative humidity? Why is it called relative? Elaborate on why relative humidity should be controlled in pharmaceutical industry?	5
3 e	Define polymorphism. Add a note on different problems that can be overcome by changing the polymorphic form.	5
3 f	Enlist the assumptions of Langmuir adsorption isotherm and derive the equation for the same.	5
3 g	Explain in detail the various factors influencing solubility of carbon dioxide in water.	5
3 h	With the help of a suitable example, graphical representation and necessary equations, explain "solubility method" as a method of analysis of complexes.	5
3 i	Give the effect of administering the following in a patient intravenously: 2 %w/v sodium	5

chloride solution, 0.5 %w/v dextrose solution. Explain White-Vincent method for tonicity adjustment.