

St.James College of Pharmaceutical Sciences St.James medical Academy River Bank, Chalakudy			
Programme:	<b>B. Pharm</b>	Sem.:	III
Name of Course: (Subject)	PHYSICAL PHARMACEUTICS I	Course Code:	BP302T
Teaching faculty of the course	RINKU JAYAPRAKASH		

### Summary of the Lecture Plan

Topic	Lectures	Hours
<b>Solubility of drugs</b>	Solubility expressions, mechanisms of solute solvent interactions, ideal solubility parameters, solvation & association,	3
	quantitative approach to the factors influencing solubility of drugs, diffusion principles in biological systems. Distribution law, its limitations and applications	3
	Solubility of gas in liquids, solubility of liquids in liquids, (Binary solutions, ideal solutions) Raoult's law, real solutions	2
	Partially miscible liquids, Critical solution temperature and applications	2
<b>States of Matter and properties of matter</b>	State of matter, changes in the state of matter, latent heats, vapour pressure, sublimation critical point, eutectic mixtures	3
	liquid complexes, liquid crystals, glassy states, solidcrystalline, amorphous & polymorphism.	3
	gases, aerosols – inhalers, relative humidity	1
	Refractive index, optical rotation, dielectric constant, dipole moment,	2
	dissociation constant, determinations and applications	1
<b>Physicochemical properties of drug molecules</b>		
<b>Micromeretics</b>	Particle size and distribution, average particle size, number and weight distribution, particle number	3
	methods for determining particle size by (different methods), counting and separation method	2
	particle shape, specific surface, methods for determining surface area, permeability, adsorption	2
	derived properties of powders, porosity, packing arrangement, densities,	2
	bulkiness & flow properties.	1

<b>Complexation and protein binding</b>	Introduction, Classification of Complexation, Applications, methods of analysis	3
	protein binding,	2
	Complexation and drug action, crystalline structures of complexes	2
	thermodynamic treatment of stability constants	1
<b>pH, buffers and Isotonic solutions</b>	Sorensen's pH scale, pH determination (electrometric and calorimetric)	3
	applications of buffers, buffer equation, buffer capacity	2
	buffers in pharmaceutical and biological systems, buffered isotonic solutions.	2

**Major issues or Core aspects to be addressed/ covered:**

<b>SOLUBILITY OF DRUGS</b>
Different solubility expressions
mechanisms of solute solvent interactions
solubility parameters, solvation & association,
factors influencing solubility of drugs& diffusion principles in biological systems
Solubility of gas in liquids & liquids in liquids, (Binary solutions, ideal solutions) Raoult' s law &, real solutions
Partially miscible liquids& Critical solution temperature and applications
<b>States of Matter and properties of matter</b>
State of matter& changes in the state of matter
Discussion on latent heat, vapour pressure, sublimation, eutectic mixtures
liquid complexes ,glassy states, solid crystalline, amorphous & polymorphism.
aerosols- inhalers, relative humidity
Determination & applications of refractive index, optical rotation, dielectric constant, dipole moment& dissociation constant
<b>Micromeritics</b>
methods for determining particle size by (different methods), counting and separation method
Particle size and distribution, average particle size, number and weight distribution, particle number
specific surface, methods for determining surface area, permeability, adsorption
derived properties of powders, porosity, packing arrangement, densities,
bulkiness & flow properties.
<b>Complexation and protein binding</b>

Classification of Complexation, and its Applications
Different method of analysis
protein binding,
Complexation and drug action, crystalline structures of complexes
<b>pH, buffers and Isotonic solutions</b>
Sorensen's pH scale
Determination of pH
Buffers & applications, buffer equation, buffer capacity
buffers in pharmaceutical and biological systems, buffered isotonic solutions.
<b>Topic Title</b>

### Sample Questions

<b>Solubility of drugs</b>
What are the different solubility expressions used?
Mechanism of solute solvent interaction
What are the solubility parameters?
Explain briefly the solubility of liquid in liquid
What are ideal solutions & real solutions?
Critical solution temperature and its application
<b>States of Matter and properties of matter</b>
Explain about vapour pressure & sublimation
Differentiate sublimation & eutectic mixture
Explain about aerosols
Differentiate amorphous & crystalline substances
What are the different physico chemical properties of drug and how you can determine it and also explain about their applications?
<b>Micromeritics</b>
Method to determine the particle size
Methods to determine the surface area
Derived properties of powder
Explain about the bulkiness & flow properties
What are the different packing arrangements?
How you can define average particle size?

<b>Complexation and protein binding</b>
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Classification of complexation
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What are the applications & method of analysis of complexation?
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Explain about the complexation & drug action
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Explain about the thermodynamic treatment of stability constants
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<b>pH, buffers and Isotonic solutions</b>
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Determination of pH
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What are buffers?
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What are buffer equations and buffer capacity?
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Explain about the buffers in pharmaceutical & biological systems
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Topic Title