

Subject: Physical Pharmaceutics-I

Year and Sem: Second Year B. Pharm., Sem. III,  
CBCS (Revised 2019)

Duration: 3 hours

Total marks: 80

N.B.: 1. All questions are compulsory

2. Figures to right indicate full marks

Q. 1	Choose appropriate option for following multiple choice based questions.	20
1	A solution of two liquids boils at a temperature lower than the boiling point of either of them. Hence, the binary solution shows _____.	
a	Positive deviation from Raoult's law	
b	Negative deviation from Raoult's law	
c	No deviation from Raoult's law	
d	Positive or negative deviation from Raoult's law depending upon the composition	
2	Passage of drug molecule across a cell membrane from region of high concentration to low concentration is termed as-	
a	Dissociation Constant	
b	Passive Diffusion	
c	Partition Coefficient	
d	HLB	
3	The increase in solubility of a non-polar drug in water on addition of water miscible organic liquid is known as	
a	Dissolution	
b	Cosolvency	
c	Solubilization	
d	Detergency	
4	The Nernst distribution law is applicable when	
a	the molecular state of the solute is the same in both the solvents	
b	the molecular state of the solute is different in both the solvents	
c	there is association or dissociation of the solute in one of the solvents	
d	the solute is insoluble in both the solvents	
5	Which of the following is not a pair of partially miscible liquid?	
a	Carbon tetrachloride – Water	
b	Phenol – Water	
c	Triethanolamine – Water	
d	Nicotine - Water	
6	It is the description of outer appearance of Crystal	
a	Crystal Habit	
b	Crystal Orbital	

<b>c</b>	Pseudomorphs	
<b>d</b>	Fusion point	
<b>7</b>	Polymorphs exhibit different properties except	
<b>a</b>	Solubility	
<b>b</b>	Diffraction pattern	
<b>c</b>	Melting point	
<b>d</b>	Chemical property	
<b>8</b>	Which state has the fluidity of a liquid and optical properties of solid crystals?	
<b>a</b>	Liquid crystal	
<b>b</b>	Supercritical fluid	
<b>c</b>	Glassy state	
<b>d</b>	Crystalline state	
<b>9</b>	Optical Rotation is _____ property.	
<b>a</b>	Constitutive	
<b>b</b>	Extensive	
<b>c</b>	Colligative	
<b>d</b>	Additive	
<b>10</b>	Capillary rise method determines	
<b>a</b>	Spreading coefficient	
<b>b</b>	Interfacial tension	
<b>c</b>	Surface tension	
<b>d</b>	Spreading constant	
<b>11</b>	The concentration of surfactant at which it begins to form micelles is called as	
<b>a</b>	Critical point	
<b>b</b>	Krafft point	
<b>c</b>	Critical micellar concentration	
<b>d</b>	Cloud point	
<b>12</b>	Which of the following does NOT have an effect on adsorption from solution onto a solid adsorbent?	
<b>a</b>	Solubility level of solute	
<b>b</b>	Adsorption capacity of adsorbent	
<b>c</b>	Temperature of adsorption medium	
<b>d</b>	Surface area of adsorbent	
<b>13</b>	Molecules on the surface of a liquid are subjected to intermolecular forces in the direction of the interface and toward the bulk of the phase. Therefore:	
<b>a</b>	These forces tend to increase the surface.	
<b>b</b>	These forces tend to decrease the surface.	

<b>c</b>	These forces are compensated by adhesion (attraction to unlike molecules).	
<b>d</b>	These forces are compensated by cohesion (attraction to like molecules).	
<b>14</b>	If the work of adhesion is more than the work of cohesion	
<b>a</b>	Spreading will not occur	
<b>b</b>	Diffusion will occur	
<b>c</b>	Spreading will occur	
<b>d</b>	Diffusion will not occur	
<b>15</b>	Identify the naturally occurring chelate	
<b>a</b>	Haemoglobin	
<b>b</b>	EDTA	
<b>c</b>	Dimercaprol	
<b>d</b>	Diethylenetriamine	
<b>16</b>	_____ is the most abundant protein that serves as carrier for most of the drug molecules.	
<b>a</b>	Albumin	
<b>b</b>	Globulin	
<b>c</b>	Chlorophyll	
<b>d</b>	EDTA	
<b>17</b>	The glycine-cupric complex can be analysed by	
<b>a</b>	pH titration method	
<b>b</b>	IR spectroscopy	
<b>c</b>	Job's method	
<b>d</b>	Distribution method	
<b>18</b>	Following are the physiological buffers except	
<b>a</b>	Citrate	
<b>b</b>	Phosphate	
<b>c</b>	Bicarbonate	
<b>d</b>	Haemoglobin	
<b>19</b>	pH of 0.01N sodium hydroxide is	
<b>a</b>	1.2	
<b>b</b>	10	
<b>c</b>	2	
<b>d</b>	12	
<b>20</b>	For acidic drug solution containing 50% each of ionized and unionized drug, Henderson Hasselbalch equation can be modified to _____	
<b>a</b>	$\text{pH}=\text{pka}$	
<b>b</b>	$\text{pH}=1/2 \text{ pka}$	
<b>c</b>	$\text{pH}= 2\text{pKa}$	
<b>d</b>	$\text{pH}=\text{pka} +\log (\text{ionized}/\text{unionized})$	

<b>Q. 2 A</b>	<b>Answer any one question.</b>	<b>12</b>
<b>a</b>	Explain the concept of critical solution temperature with respect to the phenol-water system with the help of a neat labelled diagram.	
<b>b</b>	Write a note on the HLB system and its applications. A polyhydric fatty acid ester has saponification number 48 and acid number 280. What will be the HLB value of the surfactant?	
<b>Q. 2 B</b>	<b>Answer any four questions</b>	<b>48</b>
<b>a</b>	What is Raoult's law for ideal solutions? Explain in detail deviations from Raoult's law.	
<b>b.</b>	Differentiate between crystalline and amorphous solids. Write a note on pharmaceutical significance of polymorphism.	
<b>c.</b>	Define interfacial tension. List the methods to determine surface tension and explain any one method for the determination of interfacial tension.	
<b>d.</b>	Discuss pharmaceutical applications of complexes. Enlist different methods used in analysis of complexes and explain pH titration method.	
<b>e.</b>	Classify the methods to adjust tonicity explaining the principle of each method and explain any one Class I method.	