*Total No. of Questions: 22*

**Enrollment No :** _____

MEDICAPS UNIVERSITY

# Faculty of Pharmacy

## End Semester Examination May 2025

### PY3CO10 Physical Pharmaceutics -I

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|---|---|---|---|---|---|
| **Programme** | : | B.Pharm. | **Branch/Specialisation** | : | - |
| **Duration** | : | 3 hours | **Maximum Marks** | : | 75 |

**Note:** *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

**Section 1 (Answer all question(s))**

**Q1.** Enlist any four solubility expressions. **Marks: 2 CO: 1 BL: 1**

| Rubric | Marks |
|---|---|
| List of four solubility expressions---each of 0.5 mark | 2 |

**Q2.** What is critical solution temperature. **Marks: 2 CO: 1 BL: 1**

| Rubric | Marks |
|---|---|
| Definition of critical solution temperature. | 2 |

**Q3.** Give any two examples of eutectic mixtures. **Marks: 2 CO: 2 BL: 1**

| Rubric | Marks |
|---|---|
| Two examples of eutectic mixtures---each of 1 mark | 2 |

**Q4.** Define latent heat. **Marks: 2 CO: 2 BL: 1**

| Rubric | Marks |
|---|---|
| Definition of latent heat | 2 |

**Q5.** Define surface tension. **Marks: 2 CO: 3 BL: 1**

| Rubric | Marks |
|---|---|
| Definition of surface tension. | 2 |

**Q6.** Differentiate between interface and surface. **Marks: 2 CO: 3 BL: 4**

| Rubric | Marks |
|---|---|
| Difference between surface and interface. (Each 1 Mark) | 2 |

**Q7.** Define complexation. **Marks: 2 CO: 4 BL: 1**

| Rubric | Marks |
|---|---|
| Definition of complexation. | 2 |

**Q8.** Enlist any two methods for analysis of complexation. **Marks: 2 CO: 4 BL: 1**

| Rubric | Marks |
|---|---|
| Any two methods for analysis of complexation----each of one mark | 2 |

**Q9.** State buffer equation. **2 5 1**

| Rubric | Marks |
|---|---|
| Mathematical representation of buffer equation along with symbolic meaning. | 2 |

**Q10.** What is pH scale? **2 5 1**

| Rubric | Marks |
|---|---|
| Description of pH scale. | 2 |

## Section 2 (Answer any 2 question(s))

**Marks CO BL**

**Q11.** Examine ideal solution and real solution on the basis of Raoult's law with suitable examples. **10 1 4**

| Rubric | Marks |
|---|---|
| Defintion of ideal solution and real solution-2 marks<br>Explanation of ideal solution using equation and graphs as per Raoult's law-4 mark<br>Explanation of real solution using equation and graphs as per Raoult's law-4 mark | 10 |

**Q12.** Discuss in detail all the physicochemical properties of drug molecules. **10 1 1**

| Rubric | Marks |
|---|---|
| Description of all the physicochemical properties of drug molecules. (Each properties) 1 Mark | 10 |

**Q13.** Discuss distribution law along with its limitations and applications. Differentiate between crystalline and amorphous form, citing at least five differences. **10 1 4**

| Rubric | Marks |
|---|---|
| distribution law-----2 marks ,its limitations and applications-1.5 mark each | 5 |
| 5 differences between crystalline and amorphous forms-----1 mark each | 5 |

## Section 3 (Answer any 2 question(s))

**Marks CO BL**

**Q14.** Derive the mathematical equation for spreading coefficient. **5 3 3**

| Rubric | Marks |
|---|---|
| Derivation of the mathematical equation for spreading coefficient | 5 |

**Q15.** Discuss all the methods to measure surface tension and interfacial tension. **5 3 2**

| Rubric | Marks |
|---|---|
| All the methods to measure surface tension and interfacial tension. Each Method (1 Mark) | 5 |

**Q16.** Explain adsorption on solid interfaces with suitable mathematical expressions. **5 3 1**

| Rubric | Marks |
|---|---|
| Explanation adsorption on solid interfaces with suitable mathematical expressions | 5 |

## Section 4 (Answer any 2 question(s))

Marks CO BL

**Q17.** Classify different types of complexation with examples. **5 4 2**

| Rubric | Marks |
|---|---|
| Complete classification of complexes with examples | 5 |

**Q18.** Describe in detail drug-protein binding. **5 4 2**

| Rubric | Marks |
|---|---|
| Description of drug protein binding. | 5 |

**Q19.** Write a brief note on thermodynamic treatment of stability constant. **5 4 2**

| Rubric | Marks |
|---|---|
| Description of thermodynamic treatment of stability constant. | 5 |

## Section 5 (Answer all question(s))

Marks CO BL

**Q20.** Discuss different methods of pH determination in detail. **5 5 2**

| Rubric | Marks |
|---|---|
| Different methods of pH determination in detail | 5 |

**Q21.** Discuss the importance of buffers in pharmaceutical and biological systems. **5 5 2**

| Rubric | Marks |
|---|---|
| Importance of buffers in pharmaceutical and biological systems. | 5 |

**Q22.** Explain buffered isotonic solutions. **5 5 2**

| Rubric | Marks |
|---|---|
| Explanation of buffered isotonic solutions | 5 |

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