# SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

COIMBATORE-35

## QUESTION BANK

## UNIT 1

## COURSE NAME: NOVEL DRUG DELIVERY SYSTEM

## TOPIC: CONTROLLED RELEASE DRUG DELIVERY SYSTEM

| Question Type | Question | Mapping to TNMGRMU, GPAT, MRB, and Pharma Companies | Bloom's Taxonomy Level |
|---|---|---|---|
| 2-Mark | Define Controlled Drug Delivery System (CDDS). | • TNMGRMU Dec 2021; • GPAT (fundamental NDDS concepts);<br>• MRB (basic pharmaceutics knowledge);<br>• Pharma companies (e.g., Pfizer, Novartis) focus on CDDS definitions for R&D of sustained-release formulations. | Remember |
| 2-Mark | Differentiate between controlled and sustained drug delivery. | • TNMGRMU Oct 2021, Feb 2024;<br>• GPAT (key NDDS terminology);<br>• MRB (pharmacy syllabus);<br>• Pharma (e.g., Roche, GSK) applies this in designing extended-release vs. controlled-release products. | Understanding |
| 2-Mark | What is the rationale behind controlled drug delivery? | • TNMGRMU Oct 2022;<br>• GPAT (NDDS principles);<br>• MRB (therapeutic rationale);<br>• Pharma (e.g., Sanofi) uses rationale for targeted delivery systems to enhance efficacy. | Understanding |
| 2-Mark | Mention two advantages of CDDS. | • TNMGRMU Feb 2022;<br>• GPAT (advantages in NDDS); | Remember |

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| | | • MRB (basic pharmaceutics);<br>• Pharma (e.g., Merck) leverages CDDS advantages like reduced dosing frequency in product development. | |
| 2-Mark | List any four desirable properties of polymers for pharmaceutical use. | • TNMGRMU July 2022;<br>• GPAT (polymer science in NDDS); • MRB (formulation knowledge);<br>• Pharma (e.g., Amgen) uses polymers like PLGA for controlled-release formulations. | REMEMBER |
| 5-Mark | Explain the physicochemical and biological properties of drugs relevant to controlled-release formulations. | • TNMGRMU May 2022, Feb 2023, June 2023;<br>• GPAT (drug properties for NDDS);<br>• MRB (advanced pharmaceutics);<br>• Pharma (e.g., Eli Lilly) considers solubility, stability, and bioavailability in NDDS design. | Understanding |
| 5-Mark | Write a note on ideal drug candidates for controlled drug delivery. | • TNMGRMU July 2022;<br>• GPAT (drug selection for NDDS);<br>• MRB (formulation criteria);<br>• Pharma (e.g., AstraZeneca) evaluates drug half-life and therapeutic index for CDDS. | Apply |
| 5-Mark | Explain the principles of muco-adhesion. | • TNMGRMU Oct 2021, Feb 2023;<br>• GPAT (mucoadhesive systems);<br>• MRB (specialized delivery);<br>• Pharma (e.g., Teva) develops mucoadhesive patches for buccal delivery. | Understanding |
| 5-Mark | Explain the concept of osmotic pump. | • TNMGRMU July 2022;<br>• GPAT (osmotic systems);<br>• MRB (advanced delivery systems);<br>• Pharma (e.g., Alza Corporation) | Understanding |

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| | | pioneered osmotic pumps like OROS for controlled release. | |
| 5Mark | Discuss about the polymers in controlled release drug delivery system. | • TNMGRMU Dec 2021, Mar 2025;<br>• GPAT (polymer applications);<br>• MRB (formulation science);<br>• Pharma (e.g., Johnson & Johnson) uses polymers like HPMC for sustained-release matrices. | Analysis |
| 10-Mark | Explain the different approaches to designing controlled-release formulations based on diffusion, dissolution, and ion-exchange principles. | • TNMGRMU May 2022, Oct 2022, Dec 2023;<br>• GPAT (NDDS mechanisms);<br>• MRB (advanced pharmaceutics);<br>• Pharma (e.g., AbbVie) applies these principles in matrix and reservoir systems. | Analysis |
| 10-Mark | Explain the principle involved in the design of controlled drug delivery system. | • TNMGRMU Dec 2021, Oct 2022;<br>• GPAT (core NDDS design);<br>• MRB (pharmacy syllabus);<br>• Pharma (e.g., Bayer) focuses on release kinetics for CDDS development. | Understanding |
| 10-Mark | Write about the factors affecting the formulation of controlled-release drug delivery systems. | • TNMGRMU Dec 2023;<br>• GPAT (formulation challenges);<br>• MRB (formulation expertise);<br>• Pharma (e.g., Gilead) considers factors like drug solubility and patient compliance in NDDS. | Analysis |