Mapping of Level of Learning Outcomes and Content in
Internal assessment-Unit Test
Syllabus: Part of Module I and Module III
M. Pharm. (Pharmaceutical Quality Assurance)
Course 2102: Product Development II

Course Objectives: To make the learner understand the developments in design, development and evaluation of advanced drug delivery systems.

Learning Outcomes: The learner will be able to:

1. Understand the various aspects in formulation development of pharmaceutical dosage forms and novel drug delivery carriers.

2. Encompass the development of formulations, selection of various excipients, selection of routes of administration and evaluation of novel pharmaceutical carrier systems

Module 1: To study concepts of rate controlled and site- specific drug delivery systems and particulate carrier systems Credit 1

Objectives:

- To study site specific drug delivery systems to increase therapeutic efficacy of drug with minimum side-effects.
- To introduce the learners to specialized pharmaceutical dispersed systems.
- To study recent advances in particulate drug delivery systems.

LOs: Learner will be able to

1. Understand the physiology of eye and develop advancements in ocular controlled drug delivery systems.
2. Understand biochemistry and anatomy of skin, recent developments in transdermal drug delivery systems and evaluate TDDS as per regulatory guidelines.

Module 2: Advances in Oral Drug Delivery Systems Credit 1

Objectives:

- To enable the learner to understand the recent advances in Oral Drug Delivery Systems.
- To provide an insight to concepts and various types of oral controlled release drug delivery system and evaluation methods for the same.

LOs: Learners will be able to

1. Compare different types of recent oral DDS
2. Explain various ways to achieve oral CRDDS
3. Evaluate various oral CRDDS.

Module 3: To study mucosal and intrauterine drug delivery systems Credit 1

Objectives:

- To enable the learners to understand the anatomy and physiology of buccal and nasal mucosa and lungs.
- To enable the learners to understand the recent developments in mucosal drug delivery systems and its applications.
- To provide insight into rectal and vaginal drug delivery systems and recent developments in medicated IUDS, hormone- releasing IUDS and prospects for intrauterine contraception.

LOs: Learners will be able to

1. Compare anatomical and physiological differences in various mucosae

2. Discuss recent advances in mucosal DDS
3. Evaluate various mucosal DDS

Module 4: To study recent advancements in Parentral drug delivery systems & Project & Seminar Credit 1

Objectives:

- To develop an understanding of environmental controls and design considerations for Parenteral production.
- To enable learners to understand the recent advances in manufacturing of small and large volume parentrals.
- The learners will be assigned reading from books and related published articles from journals followed by interactive discussion / submission of report

LOs: Learners will be able to

1. Describe the Design requirements for parenteral production
2. Compare formulation considerations for large and small volume parenterals
3. Analyse the recent article from the journal based on DDS

C. U. Shah College of Pharmacy,
S.N.D.T. Women's University.
M. Pharm (Pharmaceutical Quality Assurance) Sem II
Product Development II
Theory Unit Test

Date: 6/4/2018 **Time:** 10.30am-11.30am **Marks:** 25

SECTION 1

1. Explain the fundamentals of antifertility action of copper. Describe any two newly developed Copper IUD (Diagram compulsory). 8M
2. Explain any two hydrogel based rectal drug delivery system. 5M

SECTION 2

1. Explain in brief cellular uptake as a biological process involved in drug transport along with their application in drug targeting 6 M
2. Differentiate between active and passive targeting 3 M
3. Describe the prodrug approach for drug delivery system 3 M

Learning outcome:

Q. No	Question	Marks	Module	Learning ourcome
Section 1				
1.	Explain the fundamentals of antifertility action of copper.	8	3	Understanda nd Apply
2.	Explain any two hydrogel based rectal drug delivery systems	5	3	Apply
Section 2				
1.	Explain in brief cellular uptake as a biological process involved in drug transport along with their application in drug targeting	6	1	Remember and apply
2.	Differentiate between active and passive targeting	3	1	Distinguish
3.	Describe the prodrug approach for drug delivery system	3	1	Understand

- Internal assessment is also carried out in the form of assignments.
- Each student is given an assignment topic individually based on syllabus and asked to select research article based on the topic assigned from peer reviewed journals with impact factor of 2 and up and critique article for its positive as well as negative points
- Student is expected to present the article in the class
- Also students are asked to prepare write-up on the theory concepts taught in class through literature search.

This facilitates presentation skills, independent working as well as team work. It helps in achieving following PO's:

1. Understand
2. Review
3. Apply
4. Compare
5. analyse