2016

THE MASTER OF PHARMACY (M. PHARM.)

COURSE REGULATION 2014

(BASED ON NOTIFICATION IN THE GAZETTE OF INDIA NO. 362, DATED DECEMBER 11, 2014)

SCHEME AND SYLLABUS

PHARMACY COUNCIL OF INDIA
Combined Council's Building, Kotla Road,
Aiwan-E-Ghalib Marg, New Delhi-110 002.
Website : www.pci.nic.

COURSE STRUCTURE AND SYLLABUS
For
M. PHARM

MPH R 18 Regulations

(Applicable for batches admitted from 2018-2019)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA - 533 003, Andhra Pradesh, India

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PHARMACY COUNCIL OF INDIA

NOTIFICATION

New Delhi, the 10th December, 2014

The Master of Pharmacy (M.Pharm) Course Regulations, 2014

No. 14-136/ 2014-PCI.—In exercise of the powers conferred by Sections 10 and 18 of the Pharmacy Act, 1948 (8 of 1948), the Pharmacy Council of India, with the approval of the Central Government hereby makes the following regulations; namely–

CHAPTER –I: REGULATIONS

1. Short Title and Commencement

These regulations shall be called as "The Revised Regulations for the Master of Pharmacy (M. Pharm.) Degree Program - Credit Based Semester System (CBSS) of the Pharmacy Council of India, New Delhi". They shall come into effect from the Academic Year 2016-17. The regulations framed are subject to modifications from time to time by the authorities of the university.

2. Minimum qualification for admission

A Pass in the following examinations

a) B. Pharm Degree examination of an Indian university established by law in India from an institution approved by Pharmacy Council of India and has scored not less than 55 % of the maximum marks (aggregate of 4 years of B.Pharm.)

b) Every student, selected for admission to post graduate pharmacy program in any PCI approved institution should have obtained registration with the State Pharmacy Council or should obtain the same within one month from the date of his/her admission, failing which the admission of the candidate shall be cancelled.

Note: It is mandatory to submit a migration certificate obtained from the respective university where the candidate had passed his/her qualifying degree (B.Pharm.)

3. Duration of the program

The program of study for M.Pharm. shall extend over a period of four semesters (two academic years). The curricula and syllabi for the program shall be prescribed from time to time by Phamacy Council of India, New Delhi.

4. Medium of instruction and examinations

Medium of instruction and examination shall be in English.

5. Working days in each semester

Each semester shall consist of not lessthan 100 working days. The odd semesters shall be conducted from the month of **J**une/**J**uly to November/December and the even semesters shall be conducted from the month of December/**J**anuary to May/**J**une in every calendar year.

6. Attendance and progress

A candidate is required to put in at least 80% attendance in individual courses considering theory and practical separately. The candidate shall complete the prescribed course satisfactorily to be eligible to appear for the respective examinations.

7. Program/Course credit structure

As per the philosophy of Credit Based Semester System, certain quantum of academic work viz. theory classes, practical classes, seminars, assignments, etc. are measured in terms of credits. On satisfactory completion of the courses, a candidate earns credits. The amount of credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly the credit associated with any of the other academic, co/extra- curricular activities is dependent upon the quantum of work expected to be put in for each of these activities per week/per activity.

7.1. Credit assignment

7.1.1. Theory and Laboratory courses

Courses are broadly classified as Theory and Practical. Theory courses consist of lecture (L) and Practical (P) courses consist of hours spent in the laboratory. Credits (C) for a course is dependent on the number of hours of instruction per week in that course, and is obtained by using a multiplier of one (1) for lecture and a multiplier of half (1/2) for practical (laboratory) hours.Thus, for example, a theory course having four lectures per week throughout the semester carries a credit of 4. Similarly, a practical having four laboratory hours per week throughout semester carries a credit of 2.

The contact hours of seminars, assignments and research work shall be treated as that of practical courses for the purpose of calculating credits. i.e., the contact hours shall be multiplied by 1/2. Similarly, the contact hours of journal club, research work presentations and discussions with the supervisor shall be considered as theory course and multiplied by 1.

7.2. Minimum credit requirements

The minimum credit points required for the award of M. Pharm. degree is 95. However based on the credit points earned by the students under the head of co-curricular activities, a student shall earn a maximum of 100 credit points. These credits are divided into Theory courses, Practical, Seminars, Assignments, Research work, Discussions with the supervisor, Journal club and Co-Curricular activities over the duration of four semesters. The credits are distributed semester-wise as shown in Table 14. Courses generally progress in sequence, building competencies and their positioning indicates certain academic maturity on the part of the learners. Learners are expected to follow the semester-wise schedule of courses given in the syllabus.

8. Academic work

A regular record of attendance both in Theory, Practical, Seminar, Assignment, Journal club, Discussion with the supervisor, Research work presentation and Dissertation shall be maintained by the department / teaching staff of respective courses.

9. Course of study

The specializations in M.Pharm program is given in Table 1.

Table – 1: List of M.Pharm. Specializations and their Code

S. No.	Specialization	Code
1.	Pharmaceutics	MPH
2.	Industrial Pharmacy	MIP
3.	Pharmaceutical Chemistry	MPC
4.	Pharmaceutical Analysis	MPA
5.	Pharmaceutical Quality Assurance	MQA
6.	Pharmaceutical Regulatory Affairs	MRA
7.	Pharmaceutical Biotechnology	MPB
8.	Pharmacy Practice	MPP
9.	Pharmacology	MPL
10.	Pharmacognosy	MPG

The course of study for M.Pharm specializations shall include Semester wise Theory & Practical as given in Table – 2 to 11. The number of hours to be devoted to each theory and practical course in any semester shall not be less than that shown in Table – 2 to 11.

Table – 2: Course of study for M. Pharm. (Pharmaceutics)

Course Code	Course	Credit Hours	Credit Points	Hrs./ wk	Marks
Semester I					
MPH101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPH102T	Drug Delivery System	4	4	4	100
MPH103T	Modern Pharmaceutics	4	4	4	100
MPH104T	Regulatory Affair	4	4	4	100
MPH105PA	Pharmaceutics Practical I	6	3	6	75
MPH105PB	Pharmaceutical Practical II	6	3	6	75
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPH201T	Molecular Pharmaceutics (Nano Tech and Targeted DDS)	4	4	4	100
MPH202T	Advanced Biopharmaceutics & Pharmacokinetics	4	4	4	100
MPH203T	Computer Aided Drug Delivery System	4	4	4	100
MPH204T	Formulation Development of Pharmaceutical and Cosmetic Products	4	4	4	100
MPH205PA	Pharmaceutics Practical III	6	3	6	75
MPH205PB	Pharmaceutics Practical IV	6	3	6	75
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 3: Course of study for M. Pharm. (Industrial Pharmacy)

Course Code	Course	Credit Hours	Credit Points	Hrs./ wk	Marks
Semester I					
MIP101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MIP102T	Pharmaceutical Formulation Development	4	4	4	100
MIP103T	Novel drug delivery systems	4	4	4	100
MIP104T	Intellectual Property Rights	4	4	4	100
MIP105PA	Industrial Pharmacy Practical I	6	3	6	75
MIP105PB	Industrial Pharmacy Practical II	6	3	6	75
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MIP201T	Advanced Biopharmaceutics and Pharmacokinetics	4	4	4	100
MIP202T	Scale up and Technology Transfer	4	4	4	100
MIP203T	Pharmaceutical Production Technology	4	4	4	100
MIP204T	Entrepreneurship Management	4	4	4	100
MIP205PA	Industrial Pharmacy Practical III	6	3	6	75
MIP205PB	Industrial Pharmacy Practical IV	6	3	6	75
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 4: Course of study for M. Pharm. (Pharmaceutical Chemistry)

Course Code	Course	Credit Hours	Credit Points	Hrs./ wk	Marks
Semester I					
MPC101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPC1012T	Advanced Organic Chemistry -I	4	4	4	100
MPC103T	Advanced Medicinal chemistry	4	4	4	100
MPC104T	Chemistry of Natural Products	4	4	4	100
MPC105PA	Pharmaceutical Chemistry Practical I	6	3	6	75
MPC105PB	Pharmaceutical Chemistry Practical II	6	3	6	75
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPC201T	Advanced Spectral Analysis	4	4	4	100
MPC202T	Advanced Organic Chemistry -II	4	4	4	100
MPC203T	Computer Aided Drug Design	4	4	4	100
MPC204T	Pharmaceutical Process Chemistry	4	4	4	100
MPC205PA	Pharmaceutical Chemistry Practical III	6	3	6	75
MPC105PB	Pharmaceutical Chemistry Practical IV	6	3	6	75
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 5: Course of study for M. Pharm. (Pharmaceutical Analysis)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPA101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPA102T	Advanced Pharmaceutical Analysis	4	4	4	100
MPA103T	Pharmaceutical Validation	4	4	4	100
MPA104T	Food Analysis	4	4	4	100
MPA105PA	Pharmaceutical Analysis Practical I	6	3	6	75
MPA105PB	Pharmaceutical Analysis Practical II	6	3	6	75
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPA201T	Advanced Instrumental Analysis	4	4	4	100
MPA202T	Modern Bio-Analytical Techniques	4	4	4	100
MPA203T	Quality Control and Quality Assurance	4	4	4	100
MPA204T	Herbal and Cosmetic Analysis	4	4	4	100
MPA205PA	Pharmaceutical Analysis Practical III	6	3	6	75
MPA205PB	Pharmaceutical Analysis Practical IV	6	3	6	75
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 6: Course of study for M. Pharm. (Pharmaceutical Quality Assurance)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MQA101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MQA102T	Quality Management System	4	4	4	100
MQA103T	Quality Control and Quality Assurance	4	4	4	100
MQA104T	Product Development and Technology Transfer	4	4	4	100
MQA105PA	Pharmaceutical Quality Assurance Practical I	6	3	6	75
MQA105PB	Pharmaceutical Quality Assurance Practical II	6	3	6	75
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MQA201T	Hazards and Safety Management	4	4	4	100
MQA202T	Pharmaceutical Validation	4	4	4	100
MQA203T	Audits and Regulatory Compliance	4	4	4	100
MQA204T	Pharmaceutical Manufacturing Technology	4	4	4	100
MQA205PA	Pharmaceutical Quality Assurance Practical III	6	3	6	75
MQA205PB	Pharmaceutical Quality Assurance Practical IV	6	3	6	75
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 7: Course of study for M. Pharm. (Regulatory Affairs)

Course Code	Course	Credit Hours	Credit Points	Hrs./ wk	Marks
Semester I					
MRA101T	Good Regulatory Practices	4	4	4	100
MRA102T	Documentation and Regulatory Writing	4	4	4	100
MRA103T	Clinical Research Regulations	4	4	4	100
MRA104T	Regulations and Legislation for Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals In India and Intellectual Property Rights	4	4	4	100
MRA105PA	Regulatory Affairs Practical I	6	3	6	75
MRA105PB	Regulatory Affairs Practical II	6	3	6	75
	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650
Semester II					
MRA201T	Regulatory Aspects of Drugs & Cosmetics	4	4	4	100
MRA202T	Regulatory Aspects of Herbal & Biologicals	4	4	4	100
MRA203T	Regulatory Aspects of Medical Devices	4	4	4	100
MRA204T	Regulatory Aspects of Food & Nutraceuticals	4	4	4	100
MRA205PA	Regulatory Affairs Practical III	6	3	6	75
MRA205PB	Regulatory Affairs Practical IV	6	3	6	75
	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 8: Course of study for M. Pharm. (Pharmaceutical Biotechnology)

Course Code	Course	Credit Hours	Credit Points	Hrs./ wk	Marks
Semester I					
MPB101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPB102T	Microbial And Cellular Biology	4	4	4	100
MPB103T	Bioprocess Engineering and Technology	4	4	4	100
MPB104T	Advanced Pharmaceutical Biotechnology	4	4	4	100
MPB105PA	Pharmaceutical Biotechnology Practical I	6	3	6	75
MPB105PB	Pharmaceutical Biotechnology Practical II	6	3	6	75
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPB201T	Proteins and protein Formulation	4	4	4	100
MPB202T	Immunotechnology	4	4	4	100
MPB203T	Bioinformatics and Computer Technology	4	4	4	100
MPB204T	Biological Evaluation of Drug Therapy	4	4	4	100
MPB205PA	Pharmaceutical Biotechnology Practical III	6	3	6	75
MPB205PB	Pharmaceutical Biotechnology Practical IV	6	3	6	75
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650

Table – 9: Course of study for M. Pharm. (Pharmacy Practice)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPP101T	Clinical Pharmacy Practice	4	4	4	100
MPP102T	Pharmacotherapeutics-I	4	4	4	100
MPP103T	Hospital & Community Pharmacy	4	4	4	100
MPP104T	Clinical Research	4	4	4	100
MPP105PA	Pharmacy Practice Practical I	6	3	6	75
MPP105PB	Pharmacy Practice Practical II	6	3	6	75
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPP201T	Principles of Quality Use of Medicines	4	4	4	100
MPP102T	Pharmacotherapeutics II	4	4	4	100
MPP203T	Clinical Pharmacokinetics and Therapeutic Drug Monitoring	4	4	4	100
MPP204T	Pharmacoepidemiology & Pharmacoeconomics	4	4	4	100
MPP205PA	Pharmacy Practice Practical III	6	3	6	75
MPP205PB	Pharmacy Practice Practical IV	6	3	6	75
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 10: Course of study for (Pharmacology)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPL101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPL102T	Advanced Pharmacology-I	4	4	4	100
MPL103T	Pharmacological and Toxicological Screening Methods-I	4	4	4	100
MPL104T	Cellular and Molecular Pharmacology	4	4	4	100
MPL105PA	Pharmacology Practical I	6	3	6	75
MPL105PB	Pharmacology Practical II	6	3	6	75
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPL201T	Advanced Pharmacology II	4	4	4	100
MPL202T	Pharmacological and Toxicological Screening Methods-II	4	4	4	100
MPL203T	Principles of Drug Discovery	4	4	4	100
MPL204T	Experimental Pharmacology practical- II	4	4	4	100
MPL205PA	Pharmacology Practical III	6	3	6	75
MPL205PB	Pharmacology Practical IV	6	3	6	75
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 11: Course of study for M. Pharm. (Pharmacognosy)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPG101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPG102T	Advanced Pharmacognosy-1	4	4	4	100
MPG103T	Phytochemistry	4	4	4	100
MPG104T	Industrial Pharmacognostical Technology	4	4	4	100
MPG105PA	Pharmacognosy Practical I	6	3	6	75
MPG105PB	Pharmacognosy Practical II	6	3	6	75
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPG201T	Medicinal Plant biotechnology	4	4	4	100
MPG102T	Advanced Pharmacognosy-II	4	4	4	100
MPG203T	Indian system of medicine	4	4	4	100
MPG204T	Herbal cosmetics	4	4	4	100
MPG205PA	Pharmacognosy Practical III	6	3	6	75
MPG205PB	Pharmacognosy Practical IV	6	3	6	75
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 12: Course of study for M. Pharm. III Semester
(Common for All Specializations)

Course Code	Course	Credit Hours	Credit Points
MRM301T	Research Methodology and Biostatistics*	4	4
-	Journal club	1	1
-	Discussion / Presentation (Proposal Presentation)	2	2
-	Research Work	28	14
Total		35	21

* Non University Exam

Table – 13: Course of study for M. Pharm. IV Semester
(Common for All Specializations)

Course Code	Course	Credit Hours	Credit Points
-	Journal Club	1	1
-	Research Work	31	16
-	Discussion/Final Presentation	3	3
Total		35	20

Table – 14: Semester wise credits distribution

Semester	Credit Points
I	26
II	26
III	21
IV	20
Co-curricular Activities (Attending Conference, Scientific Presentationsand Other Scholarly Activities)	Minimum=02 Maximum=07*
Total Credit Points	Minimum=95 Maximum=100*

*Credit Points for Co-curricular Activities

Table – 15: Guidelines for Awarding Credit Points for Co-curricular Activities

Name of the Activity	Maximum Credit Points Eligible / Activity
Participation in National Level Seminar/Conference/Workshop/Symposium/ Training Programs (related to the specialization of the student)	01
Participation in international Level Seminar/Conference/Workshop/Symposium/ Training Programs (related to the specialization of the student)	02
Academic Award/Research Award from State Level/National Agencies	01
Academic Award/Research Award from International Agencies	02
Research / Review Publication in National Journals (Indexed in Scopus / Web of Science)	01
Research / Review Publication in International Journals (Indexed in Scopus / Web of Science)	02

Note: International Conference: Held outside India; International Journal: The Editorial Board Outside India

*The credit points assigned for extracurricular and or co-curricular activities shall be given by the Principals of the colleges and the same shall be submitted to the University. The criteria to acquire this credit point shall be defined by the colleges from time to time.

10. Program Committee

The M. Pharm. programme shall have a Programme Committee constituted by the Head of the Institution in consultation with all the Heads of the departments.

The composition of the Programme Committee shall be as follows:

A teacher at the cadre of Professor shall be the Chairperson; One Teacher from each M.Pharm specialization and four student representatives (two from each academic year), nominated by the Head of the institution.

Duties of the Programme Committee:

Periodically reviewing the progress of the classes.

Discussing the problems concerning curriculum, syllabus and the conduct of classes.

Discussing with the course teachers on the nature and scope of assessment for the course and the same shall be announced to the students at the beginning of respective semesters.

1. Communicating its recommendation to the Head of the Institution on academic matters.
2. The Programme Committee shall meet at least twice in a semester preferably at the end of each sessional exam and before the end semester exam.

11. Examinations/Assessments

The schemes for internal assessment and end semester examinations are given from Table–16.

11.1. End semester examinations

The End Semester Examinations for each theory and practical course through semesters I to IV shall be conducted by the respective university except for the subject with asterix symbol (*) for which examinations shall be conducted by the subject experts at college level and the marks/grades shall be submitted to the university.

Tables – 16: Schemes for internal assessments and end semester (Pharmaceutics- MPH)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continues Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPH101T	Modern Pharmaceutical Analytical Techniques	10	15	1Hr	25	75	3Hr	100
MPH102T	Drug Delivery Systems	10	15	1Hr	25	75	3Hr	100
MPH103T	Modern Pharmaceutics	10	15	1Hr	25	75	3Hr	100
MPH104T	Regulatory Affairs	10	15	1Hr	25	75	3Hr	100
MPH105PA	Pharmaceutics Practical I	10	15	3Hr	25	50	3Hr	75
MPH105PB	Pharmaceutics Practical II	10	15	3Hr	25	50	3Hr	75
-	Seminar/Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPH201T	Molecular Pharmaceutics (Nano Tech and Targeted DDS)	10	15	1Hr	25	75	3Hr	100
MPH202T	Advanced Biopharmaceutics & Pharmacokinetics	10	15	1Hr	25	75	3Hr	100
MPH203T	Computer Aided Drug Delivery System	10	15	1Hr	25	75	3Hr	100
MPH204T	Formulation Development of Pharmaceutical and Cosmetic Products	10	15	1Hr	25	75	3Hr	100
MPH205PA	Pharmaceutics Practical I	10	15	3Hr	25	50	3Hr	75
MPH205PB	Pharmaceutics Practical I	10	15	3Hr	25	50	3Hr	75
-	Seminar/Assignment	-	-	-	-	-	-	100
Total								650

Tables – 17: Schemes for internal assessments and end semester (Industrial Pharmacy- MIP)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continues Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MIP101T	Modern Pharmaceutical Analytical Techniques	10	15	1Hr	25	75	3Hr	100
MIP102T	Pharmaceutical Formulation Development	10	15	1Hr	25	75	3Hr	100
MIP103T	Novel Drug Delivery Systems	10	15	1Hr	25	75	3Hr	100
MIP104T	Intellectual Property rights	10	15	1Hr	25	75	3Hr	100
MIP105PA	Industrial Pharmacy Practical I	10	15	3Hr	25	50	3Hr	75
MIP105PB	Industrial Pharmacy Practical II	10	15	3Hr	25	50	3Hr	75
-	Seminar/Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MIP201T	Advanced Biopharmaceutics and Pharmacokinetics	10	15	1Hr	25	75	3Hr	100
MIP202T	Scale up and Technology Transfer	10	15	1Hr	25	75	3Hr	100
MIP203T	Pharmaceutical Production Technology	10	15	1Hr	25	75	3Hr	100
MIP204T	Entrepreneurship Management	10	15	1Hr	25	75	3Hr	100
MIP205PA	Industrial Pharmacy Practical III	10	15	3Hr	25	50	3Hr	75
MIP205PB	Industrial Pharmacy Practical IV	10	15	3Hr	25	50	3Hr	75
-	Seminar/Assignment	-	-	-	-	-	-	100
Total								650

Tables – 18: Schemes for internal assessments and end semester (Pharmaceutical Chemistry-MPC)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continues Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPC101T	Modern Pharmaceutical Analytical Techniques	10	15	1Hr	25	75	3Hr	100
MPC102T	Advanced Organic Chemistry – I	10	15	1Hr	25	75	3Hr	100
MPC103T	Advanced Medicinal Chemistry	10	15	1Hr	25	75	3Hr	100
MPC104T	Chemistry of Natural Products	10	15	1Hr	25	75	3Hr	100
MPC105PA	Pharmaceutical chemistry Practical I	10	15	3Hr	25	50	3Hr	75
MPC105PB	Pharmaceutical chemistry Practical II	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPC201T	Advanced Spectral Analysis	10	15	1Hr	25	75	3Hr	100
MPC202T	Advanced Organic Chemistry II	10	15	1Hr	25	75	3Hr	100
MPC203T	Computer Aided Drug Design	10	15	1Hr	25	75	3Hr	100
MPC204T	Pharmaceutical Process Chemistry	10	15	1Hr	25	75	3Hr	100
MPC205PA	Pharmaceutical chemistry Practical III	10	15	3Hr	25	50	3Hr	75
MPC205PB	Pharmaceutical chemistry Practical IV	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650

Tables – 19: Schemes for internal assessments and end semester (Pharmaceutical Analysis-MPA)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continues Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPA101T	Modern Pharmaceutical Analytical Techniques	10	15	1Hr	25	75	3Hr	100
MPA102T	Advanced Pharmaceutical Analysis	10	15	1Hr	25	75	3Hr	100
MPA103T	Pharmaceutical Validation	10	15	1Hr	25	75	3Hr	100
MPA104T	Food Analysis	10	15	1Hr	25	75	3Hr	100
MPA105PA	Pharmaceutical Analysis Practical I	10	15	3Hr	25	50	3Hr	75
MPA105PB	Pharmaceutical Analysis Practical II	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPA201T	Advanced Instrumental Analysis	10	15	1Hr	25	75	3Hr	100
MPA202T	Modern Bio-Analytical Techniques	10	15	1Hr	25	75	3Hr	100
MPA203T	Quality Control and Quality Assurance	10	15	1Hr	25	75	3Hr	100
MPA204T	Herbal and Cosmetic Analysis	10	15	1Hr	25	75	3Hr	100
MPA205PA	Pharmaceutical Analysis Practical III	10	15	3Hr	25	50	3Hr	75
MPA205PB	Pharmaceutical Analysis Practical IV	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650

Tables – 20: Schemes for internal assessments and end semester (Pharmaceutical Quality Assurance- MQA)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continues Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MQA101T	Modern Pharmaceutical Analytical Techniques	10	15	1Hr	25	75	3Hr	100
MQA102T	Quality Management System	10	15	1Hr	25	75	3Hr	100
MQA103T	Quality Control and Quality Assurance	10	15	1Hr	25	75	3Hr	100
MQA104T	Product Development and Technology Transfer	10	15	1Hr	25	75	3Hr	100
MQA105PA	Pharmaceutical Quality Assurance Practical I	10	15	3Hr	25	50	3Hr	75
MQA105PB	Pharmaceutical Quality Assurance Practical II	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MQA201T	Hazards and Safety Management	10	15	1Hr	25	75	3Hr	100
MQA202T	Pharmaceutical Validation	10	15	1Hr	25	75	3Hr	100
MQA203T	Audits and Regulatory Compliance	10	15	1Hr	25	75	3Hr	100
MQA204T	Pharmaceutical Manufacturing Technology	10	15	1Hr	25	75	3Hr	100
MQA205PA	Pharmaceutical Quality Assurance Practical III	10	15	3Hr	25	50	3Hr	75
MQA205PB	Pharmaceutical Quality Assurance Practical IV	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650

Tables – 21: Schemes for internal assessments and end semester (Pharmaceutical Regulatory Affairs- MRA)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continues Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MRA101T	Good Regulatory Practices	10	15	1Hr	25	75	3Hr	100
MRA102T	Documentation and Regulatory Writing	10	15	1Hr	25	75	3Hr	100
MRA103T	Clinical Research Regulations	10	15	1Hr	25	75	3Hr	100
MRA104T	Regulations and Legislations for Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals in India and Intellectual Property Rights	10	15	1Hr	25	75	3Hr	100
MRA105PA	Regulatory Affairs Practicals I	10	15	3Hr	25	50	3Hr	75
MRA105PB	Regulatory Affairs Practicals II	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MRA201T	Regulatory Aspects of Drugs and Cosmetics	10	15	1Hr	25	75	3Hr	100
MRA202T	Regulatory Aspects of Herbal & Biologicals	10	15	1Hr	25	75	3Hr	100
MRA203T	Regulatory Aspects of Medical Devices	10	15	1Hr	25	75	3Hr	100
MRA204T	Regulatory Aspects of Food Neutraceuticals	10	15	1Hr	25	75	3Hr	100
MRA205PA	Regulatory Affairs Practicals III	10	15	3Hr	25	50	3Hr	75
MRA205PB	Regulatory Affairs Practicals IV	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650

Tables – 22: Schemes for internal assessments and end semester (Pharmaceutical Biotechnology-MPB)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continues Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPB101T	Modern Pharmaceutical Analytical Techniques	10	15	1Hr	25	75	3Hr	100
MPB102T	Microbial and Cellular Biology	10	15	1Hr	25	75	3Hr	100
MPB103T	Bioprocess Engineering and Technology	10	15	1Hr	25	75	3Hr	100
MPB104T	Advanced Pharmaceutical Biotechnology	10	15	1Hr	25	75	3Hr	100
MPB105PA	Pharmaceutical Biotechnology Practical I	10	15	3Hr	25	50	3Hr	75
MPB105PB	Pharmaceutical Biotechnology Practical II	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPB201T	Proteins and Protein Formulation	10	15	1Hr	25	75	3Hr	100
MPB202T	Immunotechnology	10	15	1Hr	25	75	3Hr	100
MPB203T	Bioinformatics and Computer Technology	10	15	1Hr	25	75	3Hr	100
MPB204T	Biological Evaluation of Drug Therapy	10	15	1Hr	25	75	3Hr	100
MPB205PA	Pharmaceutical Biotechnology Practical III	10	15	3Hr	25	50	3Hr	75
MPB205PB	Pharmaceutical Biotechnology Practical IV	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650

Tables – 23: Schemes for internal assessments and end semester (Pharmacy Practice- MPP)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continues Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPP101T	Clinical Pharmacy Practice	10	15	1Hr	25	75	3Hr	100
MPP102T	Pharmacotherapeutics - I	10	15	1Hr	25	75	3Hr	100
MPP103T	Hospital & Community Pharmacy	10	15	1Hr	25	75	3Hr	100
MPP104T	Clinical Research	10	15	1Hr	25	75	3Hr	100
MPP105PA	Pharmacy Practice Practical I	10	15	3Hr	25	50	3Hr	75
MPP105PB	Pharmacy Practice Practical II	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPP201T	Principles of Quality Use of Medicines	10	15	1Hr	25	75	3Hr	100
MPP202T	Pharmacotherapeutics - II	10	15	1Hr	25	75	3Hr	100
MPP203T	Clinical Pharmacokinetics and Therapeutic Drug Monitoring	10	15	1Hr	25	75	3Hr	100
MPP204T	Pharmacoepidemiology & Pharmacoeconomics	10	15	1Hr	25	75	3Hr	100
MPP205PA	Pharmacy Practice Practical III	10	15	3Hr	25	50	3Hr	75
MPP205PB	Pharmacy Practice Practical IV	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650

Tables – 24: Schemes for internal assessments and end semester (Pharmacology- MPL)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continues Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPL101T	Modern Pharmaceutical Analytical Techniques	10	15	1Hr	25	75	3Hr	100
MPL102T	Advanced Pharmacology - I	10	15	1Hr	25	75	3Hr	100
MPL103T	Pharmacology and Toxicology Screening methods- I	10	15	1Hr	25	75	3Hr	100
MPL104T	Cellular and Molecular Pharmacology	10	15	1Hr	25	75	3Hr	100
MPL105PA	Pharmacology Practical I	10	15	3Hr	25	50	3Hr	75
MPL105PB	Pharmacology Practical II	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPL201T	Advanced Pharmacology - II	10	15	1Hr	25	75	3Hr	100
MPL202T	Pharmacology and Toxicology Screening methods- II	10	15	1Hr	25	75	3Hr	100
MPL203T	Principles of Drug Discovery	10	15	1Hr	25	75	3Hr	100
MPL204T	Experimental Pharmacology Practical II	10	15	1Hr	25	75	3Hr	100
MPL205PA	Pharmacology Practical III	10	15	3Hr	25	50	3Hr	75
MPL205PB	Pharmacology Practical IV	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650

Tables – 25: Schemes for internal assessments and end semester (Pharmacognosy- MPG)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continues Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPG101T	Modern Pharmaceutical Analytical Techniques	10	15	1Hr	25	75	3Hr	100
MPG102T	Advanced Pharmacognosy - I	10	15	1Hr	25	75	3Hr	100
MPG103T	Phytochemistry	10	15	1Hr	25	75	3Hr	100
MPG104T	Industrial Pharmacognostical Technology	10	15	1Hr	25	75	3Hr	100
MPG105PA	Pharmacognosy Practical I	10	15	3Hr	25	50	3Hr	75
MPG105PB	Pharmacognosy Practical II	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPG201T	Medicinal Plant Biotechnology	10	15	1Hr	25	75	3Hr	100
MPG202T	Advanced Pharmacognosy - II	10	15	1Hr	25	75	3Hr	100
MPG203T	Indian system of Medicine	10	15	1Hr	25	75	3Hr	100
MPG204T	Herbal Cosmetics	10	15	1Hr	25	75	3Hr	100
MPG205PA	Pharmacognosy Practical III	10	15	3Hr	25	50	3Hr	75
MPG205PB	Pharmacognosy Practical IV	10	15	3Hr	25	50	3Hr	75
	Seminar/Assignment	-	-	-	-	-	-	100
Total								650

Tables – 26: Schemes for internal assessments and end semester examinations (Semester III & IV)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER III								
MRM301T	Research Methodology and Biostatistics*	10	15	1 Hr	25	75	3 Hrs	100
-	Journal club	-	-	-	25	-	-	25
-	Discussion / Presentation (Proposal Presentation)	-	-	-	50	-	-	50
-	Research work*	-	-	-	-	350	1 Hr	350
Total								525
SEMESTER IV								
-	Journal club	-	-	-	25	-	-	25
-	Discussion / Presentation (Proposal Presentation)	-	-	-	75	-	-	75
-	Research work and Colloquium	-	-	-	-	400	1 Hr	400
Total								500

*Non University Examination

11.2. Internal assessment: Continuous mode

The marks allocated for Continuous mode of Internal Assessment shall be awarded as per the scheme given below.

Table – 27: Scheme for awarding internal assessment: Continuous mode

Theory	
Criteria	Maximum Marks
Attendance (Refer Table – 28)	8
Student – Teacher interaction	2
Total	10
Practical	
Attendance (Refer Table – 28)	10
Based on Practical Records, Regular viva voce, etc.	10
Total	20

Table – 28: Guidelines for the allotment of marks for attendance

Percentage of Attendance	Theory	Practical
95 – 100	8	10
90 – 94	6	7.5
85 – 89	4	5
80 – 84	2	2.5
Less than 80	0	0

11.2.1. Sessional Exams

Two sessional exams shall be conducted for each theory / practical course as per the schedule fixed by the college(s). The scheme of question paper for theory and practical sessional examinations is given in the table. The average marks of two sessional exams shall be computed for internal assessment as per the requirements given in tables.

12. Promotion and award of grades

A student shall be declared PASS and eligible for getting grade in a course of M.Pharm.programme if he/she secures at least 50% marks in that particular courseincluding internal assessment.

13. Carry forward of marks

In case a student fails to secure the minimum 50% in any Theory or Practical course as specified in 12, then he/she shall reappear for the end semester examination of that course. However his/her marks of the Internal Assessment shall be carried over and he/she shall be entitled for grade obtained by him/her on passing.

14. Improvement of internal assessment

A student shall have the opportunity to improve his/her performance only once in the sessional exam component of the internal assessment. The re-conduct of the sessional exam shall be completed before the commencement of next end semester theory examinations.

15. Reexamination of end semester examinations

Reexamination of end semester examination shall be conducted as per the schedule given in table 29. The exact dates of examinations shall be notified from time to time.

Table – 29: Tentative schedule of end semester examinations

Semester	For Regular Candidates	For Failed Candidates
I and III	November / December	May / June
II and IV	May / June	November / December

16. Allowed to keep terms (ATKT):

No student shall be admitted to any examination unless he/she fulfills the norms given in 6. ATKT rules are applicable as follows:

A student shall be eligible to carry forward all the courses of I and IIsemesters till the III semester examinations. However, he/she shall not be eligible to attend the courses of IV semester until all the courses of I, II and III semesters are successfully completed.

A student shall be eligible to get his/her CGPA upon successful completion of the courses of I to IV semesters within the stipulated time period as per the norms.

Note: Grade AB should be considered as failed and treated as one head for deciding ATKT. Such rules are also applicable for those students who fail to register for examination(s) of any course in any semester.

17. Grading of performances

17.1. Letter grades and grade points allocations:

Based on the performances, each student shall be awarded a final letter grade at the end of the semester for each course. The letter grades and their corresponding grade points are given in Table – 30.

Table–30: Letter grades and grade points equivalent to Percentage of marks and performances.

Percentage of Marks Obtained	Letter Grade	Grade Point	Performance
90.00 – 100	O	10	Outstanding
80.00 – 89.99	A	9	Excellent
70.00 – 79.99	B	8	Good
60.00 – 69.99	C	7	Fair
50.00 – 59.99	D	6	Average
Less than 50	F	0	Fail
Absent	AB	0	Fail

A learner who remains absent for any end semester examination shall be assigned a letter grade of AB and a corresponding grade point of zero. He/she should reappear for the said evaluation/examination in due course.

18. The Semester grade point average (SGPA)

The performance of a student in a semester is indicated by a number called 'Semester Grade Point Average' (SGPA). The SGPA is the weighted average of the grade points obtained in all the courses by the student during the semester. For example, if a student takes five courses (Theory/Practical) in a semester with credits C1, C2, C3 and C4 and the student's grade points in these courses are G1, G2, G3 and G4, respectively, and then students' SGPA is equal to:

$$SGPA = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4G_4}{C_1 + C_2 + C_3 + C_4}$$

The SGPA is calculated to two decimal points. It should be noted that, the SGPA for any semester shall take into consideration the F and ABS grade awarded in that semester. For example if a learner has a F or ABS grade in course 4, the SGPA shall then be computed as:

$$SGPA = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4 * ZERO}{C_1 + C_2 + C_3 + C_4}$$

19. Cumulative Grade Point Average (CGPA)

The CGPA is calculated with the SGPA of all the IV semesters to two decimal points and is indicated in final grade report card/final transcript showing the grades of all IV semesters and their courses. The CGPA shall reflect the failed status in case of F grade(s), till the course(s) is/are passed. When the course(s) is/are passed by obtaining a pass grade on subsequent examination(s) the CGPA shall only reflect the new grade and not the fail grades earned earlier. The CGPA is calculated as:

$$CGPA = \frac{C_1S_1 + C_2S_2 + C_3S_3 + C_4S_4}{C_1 + C_2 + C_3 + C_4}$$

where C_1, C_2, C_3,.... is the total number of credits for semester I,II,III,…. and S_1,S_2, S_3,....is the SGPA of semester I,II,III,…. .

20. Declaration of class

The class shall be awarded on the basis of CGPA as follows:

First Class with Distinction = CGPA of 7.50 and above
First Class = CGPA of 6.00 to 7.49
Second Class = CGPA of 5.00 to 5.99

21. Project work

All the students shall undertake a project under the supervision of a teacher in Semester III to IV and submit a report. 4 copies of the project report shall be submitted (typed & bound copy not less than 75 pages).

The internal and external examiner appointed by the University shall evaluate the project at the time of the Practical examinations of other semester(s). The projects shall be evaluated as per the criteria given below.

Evaluation of Dissertation Book:

Objective(s) of the work done		50 Marks
Methodology adopted		150 Marks
Results and Discussions		250 Marks
Conclusions and Outcomes		50 Marks
	Total	500 Marks

Evaluation of Presentation:

Presentation of work		100 Marks
Communication skills		50 Marks
Question and answer skills		100 Marks
	Total	250 Marks

22. Award of Ranks

Ranks and Medals shall be awarded on the basis of final CGPA. However, candidates whofail in one or more courses during the M.Pharm program shall not be eligible for award of ranks. Moreover, the candidates should have completed the M. Pharm program in minimum prescribed number of years, (two years) for the award of Ranks.

23. Award of degree

Candidates who fulfill the requirements mentioned above shall be eligible for award of degree during the ensuing convocation.

24. Duration for completion of the program of study

The duration for the completion of the program shall be fixed as double the actual duration of the program and the students have to pass within the said period, otherwise they have to get fresh Registration.

25. Revaluation I Retotaling of answer papers

There is no provision for revaluation of the answer papers in any examination. However, the candidates can apply for retotaling by paying prescribed fee.

26. Re-admission after break of study

Candidate who seeks re-admission to the program after break of study has to get the approval from the university by paying a condonation fee.

Website: www.jntuk.edu.in
Email: dap@jntuk.edu.in

Phone: 0884-2300991
Mobile: 7032894555

Directorate of Academic Planning

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA-533003, Andhra Pradesh, INDIA
(Established by AP Government Act No. 30 of 2008)

*Lr. No. JNTUK/DAP/RAC/***M. Pharmacy/***I Year/2021-22* *Date: 10-03-2021*

Dr. KVSG Murali Krishna,
M.E, Ph.D.,
Director, Academic Planning
JNTUK, Kakinada

To
All the Principals of Affiliated Colleges,
JNTUK, Kakinada.

Revised Academic Calendar for I Year M. Pharmacy
Academic year 2021-22

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**24.01.2022**		
Induction Programme	24.01.2022	12.02.2022	3W
I Unit of Instructions	14.02.2022	09.04.2022	8W
I Mid Examinations	03.04.2022	09.04.2022	
II Unit of Instructions	11.04.2022	04.06.2022	8W
II Mid Examinations	30.05.2022	04.06.2022	
Preparation & Practicals	06.06.2022	11.06.2022	1W
End Examinations	13.06.2022	25.06.2022	2W
Commencement of II Semester Class Work	**27.06.2022**		
II SEMESTER			
I Unit of Instructions	**27.06.2022**	20.08.2022	8W
I Mid Examinations	15.08.2022	20.08.2022	
II Unit of Instructions	22.08.2022	15.10.2022	8W
II Mid Examinations	17.10.2022	22.10.2022	
Preparation & Practicals	24.10.2022	29.10.2022	1W
End Examinations	31.10.2022	12.11.2022	2W
Commencement of next Year Class Work	**14.11.2022**		

10/3/22
Director Academic Planning
Director
Academic Planning
JNTUK Kakinada

Copy to the Secretary to the Hon'ble Vice Chancellor, JNTUK.
Copy to the PA to the Rector, JNTUK
Copy to the PA to the Registrar, JNTUK.
Copy to Director of Evaluation, JNTUK.
Copy to Director, IST, JNTUK.

INSTITUTIONAL EXAMINATION COMMITTEE

VIJAYA INSTITUTE OFPHARMACEUTICAL SCIENCES FOR WOMEN
Enikepadu, Vijayawada – 521108

Date: 26-07-2021

OFFICE ORDER

INSTITUTIONAL EXAMINATION COMMITTEE

The Institutional Examination Committee for the academic year 2021 – 2022 is constituted as follows and it is effective for a period of 06-09-2021 to 06-08-2022. Following staff members are appointed as Institutional Examination Committee.

S.NO	NAME	DESIGNATION	POSITION	SIGNATURE
1	Dr. K. Padmalatha	Principal	Chairman	
2	Mr. S. Venkateswara Rao	Assoc. Professor	College Examination Officer	
3	Mr. A. Jayarami Reddy	Assoc. Professor	Member	
4	Mrs. A.V.S. Hima bindu	Asst. Professor	Member	
5	Dr. N. Prathibha	Asst. Professor	Member	
6	Dr. S. Sundar	Professor	Member	

Functions and Responsibilities:

1. Ensure proper dissemination of information with regard to examination among all the stakeholders' viz. students / faculty / non – teaching staff / university authorities etc.
2. Receive and submission of exam notification / schedule from JNTUK web portal.
3. To ensure proper organization of in semester assessments / sessional / end semester examinations in the college.
4. Ensure proper communication with JNTUK with regards to examination and fulfillment of university circulars.
5. Appoint alternative external senior supervisor / chairman / internal examiners / external examiners for conduct of end semester theory / practical examination with permission of university authorities.
6. Record and issue the answer books and other exam related stationary to the invigilators / internal examiners 30 minutes before start the exam
7. Download and print the appropriate number of question papers at least 20 minutes before the commencement of the exam and maintaining absolute confidentiality
8. Resolve students / faculty / university grievances with regards to examinations.
9. Uploading internal theory / practical examination marks on JNTUK web portal.
10. Maintain records with regards to conduct of examination and results.

Copy to: 1. Establishment File
2. Concerned Faculty member

Dr. K. Padmalatha
PRINCIPAL
VIJAYA INSTITUTE OF
PHARMACEUTICAL SCIENCES FOR WOMEN
ENIKEPADU, VIJAYAWADA - 521 108

Vijaya Institute of Pharmaceutical Sciences for Women
ENIKEPADU
VIJAYAWADA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

UNIVERSITY EXAMINATION CENTER, KAKINADA

M. Pharmacy II SEMESTER (PCI REGULATION) I MID EXAMINATIONS, AUGUST - 2022

TIME TABLE

TIME : 10.00 AM TO 12.00 NOON

BRANCH & SPECIALIZATION	16-08-2022 (Tuesday)	17-08-2022 (Wednesday)	18-08-2022 (Thursday)	20-08-2022 (Saturday)
Pharmaceutics (03)	Molecular Pharmaceutics **(MPH201T)**	Advanced Bio pharmaceutics & Pharmacokinetics **(MPH202T)**	Computer Aided Drug Development **(MPH203T)**	Formulation Development of Pharmaceutical and Cosmetic Products **(MPH204T)**
Industrial Pharmacy (09)	Advanced Bio pharmaceutics and Pharmacokinetics **(MIP201T)**	Scale up and Technology Transfer **(MIP202T)**	Pharmaceutical Production Technology **(MIP203T)**	Entrepreneurship Management **(MIP204T)**
Pharmaceutical Chemistry (02)	Advanced Spectral Analysis **(MPC201T)**	Advanced Organic Chemistry II **(MPC202T)**	Computer Aided Drug Design **(MPC203T)**	Pharmaceutical Process Chemistry **(MPC204T)**
Pharmaceutical Analysis (16)	Advanced Instrumental Analysis **(MPA201T)**	Modern Bio-Analytical Techniques **(MPA202T)**	Quality Control and Quality Assurance **(MPA203T)**	Herbal and Cosmetic Analysis **(MPA204T)**
Pharmaceutical Quality Assurance (15)	Hazards and Safety Management **(MQA201T)**	Pharmaceutical Validation **(MQA202T)**	Audits and Regulatory Compliance **(MQA203T)**	Pharmaceutical Manufacturing Technology **(MQA204T)**
Pharmaceutical Regulatory Affairs (13)	Regulatory Aspects of Drugs and Cosmetics (MRA201T)	Regulatory Aspects of Herbal & Biologicals **(MRA202T)**	Regulatory Aspects of Medical Devices **(MRA203T)**	Regulatory Aspects of Food Neutraceuticals **(MRA204T)**
Pharmacy Practice (08)	Principles of Quality Use of Medicines **(MPP201T)**	Pharmacotherapeutics – II **(MPP202T)**	Clinical Pharmacokinetics and Therapeutic Drug Monitoring **(MPP203T)**	Pharmacoepidemiology & Pharmacoeconomics **(MPP204T)**
Pharmacology (06)	Advanced Pharmacology – II **(MPL201T)**	Pharmacology and Toxicology Screening methods- II **(MPL202T)**	Principles of Drug Discovery **(MPL203T)**	Clinical Research and Pharmacovigilance **(MPL204T)**
Pharmacognosy (07)	Medicinal Plant Biotechnology **(MPG201T)**	Advanced Pharmacognosy – II **(MPG202T)**	Indian system of Medicine **(MPG203T)**	Herbal Cosmetics **(MPG204T)**

NOTE: (i) If Government declares holiday on any of the above dates, the examinations will be conducted as usual

(ii) Any omissions or clashes in this Time Table may please be informed to the Controller of Examinations immediately.

(iii) The Principals are requested to inform the University, if any other substitute subjects that are not included in the above time table immediately.

DATE: 05 -08-2022

Controller of Examinations

PRINCIPAL
VIJAYA INSTITUTE OF PHARMACEUTICAL SCIENCES FOR WOMEN
ENIKEPADU, VIJAYAWADA-521 108

Vijaya Institute of Pharmaceutical Sciences for Women ENIKEPADU VIJAYAWADA

VIJAYA INSTITUTE OF PHARMACEUTICAL SCIENCES FOR WOMEN

ENIKEPADU, VIJAYAWADA - 521108

I B. PHARM, M. PHARM / II SEM I MID EXAMS, AUGUST - 2022
STAFF INVIGILATION DUTIES

Time: 10.00 AM to 12.00 NOON

DATE	Room - 1		Room - 2		Room - 3		Room - 4	
	Staff	Sign	Staff	Sign	Staff	Sign	Staff	Sign
16.08.2022 (Tuesday)	Mrs. K. Sunitha		Ms. S. J. S. Keertana		Mrs. K. Radha		Mrs. Ch. Swathi	
17.08.2022 (Wednesday)	Mrs. A. V. S. Hima Bindu		Mrs. K. Sunitha		Ms. S. J. S. Keertana		Mrs. K. Radha	
18.08.2022 (Thursday)	Mrs. A. Bhavana		Mrs. G. Krupamai		Mrs. K. Sunitha		Ms. S. J. S. Keertana	
20.08.2022 (Saturday)	Mrs. N. K. S. Neeraja		Mrs. A. Bhavana		Mrs. G. Krupamai		Mrs. K. Sunitha	
22.08.2022 (Monday)	Ms. S. J. S. Keertana		Mrs. K. Radha		Mrs. Ch. Swathi		Mrs. G. Krupamai	
23.08.2022 (Tuesday)	Mrs. K. Sunitha		Ms. S. J. S. Keertana		Mrs. K. Radha		Mrs. Ch. Swathi	

S. Venkateswara Rao
Exams Incharge
(Dr. S. Venkateswara Rao)
VIJAYA INSTITUTE OF PHARMACEUTICAL SCIENCES FOR WOMEN
ENIKEPADU, VIJAYAWADA
PIN - 521 108

Vijaya Institute of Pharmaceutical Sciences for Women
ENIKEPADU
VIJAYAWADA

Principal 11/8/22
(Dr. K. Padmalatha)
VIJAYA INSTITUTE OF PHARMACEUTICAL SCIENCES FOR WOMEN
ENIKEPADU, VIJAYAWADA
PIN - 521 108

INTERNAL SQUAD COMMITTEE

VIJAYA INSTITUTE OFPHARMACEUTICAL SCIENCES FOR WOMEN
Enikepadu, Vijayawada – 521108

Date: 26-07-2021

OFFICE ORDER

INTERNAL SQUAD COMMITTEE

The Internal Squad Committee has been constructed for smooth conduct of sessional / end semester examinations for the academic year 2021 – 2022 for the period of 06-09-2021 to 06-08-2022. Following staff members are appointed as Internal Squad Committee.

S.NO	NAME	DESIGNATION	POSITION	SIGNATURE
1	Dr. K. Padmalatha	Principal	President	
2	Mr. S. Venkateswara Rao	Assoc. Professor	Chairman	
3	Mr. A. Jayarami Reddy	Asst. Professor	Member	
4	Mrs. A.V.S. Hima bindu	Asst. Professor	Member	
5	Mrs. Ch. Anupama Swathi	Asst. Professor	Member	

Responsibilities:

1. Strict checking of unfair means is sole responsibility of members of committee.
2. Before the start of examination, the committee members should check every student.
3. Care should be taken by committee members, that the students should not carry mobile phones, calculator or any sort of electronic material inside the examination hall.
4. Check weather students are carrying hall tickets by committee members to maintain environment of examination. Any issue related to the unfair means should immediately report to the principal or college examination officer.

Copy to: 1. Establishment File
2. Concerned Faculty member

Dr. K. Padmalatha
PRINCIPAL

Vijaya Institute of Pharmaceutical Sciences for Women
ENIKEPADU VIJAYAWADA

PRINCIPAL
VIJAYA INSTITUTE OF
PHARMACEUTICAL SCIENCES FOR WOMEN
ENIKEPADU, VIJAYAWADA - 521

II MID

ATTENDANCE SHEET FOR II MID EXAMINATIONS

COURSE: M. Pharm

Date of Examination: 17.10.22 Time: 10.00 AM TO 12.00 PM

Room No: 01

Subject Name: Molecular Pharmaceutics (Nano Tech & Targeted DDS)

Subject Code: MPH201T

No. of Students Present: 05

No. of Students Absent: 01

S.No.	Hall Ticket No.	Name of the Student	Answer Booklet Serial No.	Signature of the Student
1	217N1S0301	CHATRAGADDA KIRANMAI	7N210001	Ch. Kiranmai
2	217N1S0302	GUNDIMEDA SANDHYA VANI	7N210002	G. Sandhya Vani
3	217N1S0303	TUMATY BHAVANA	7N210003	T. Bhavana
4	217N1S0304	CHAMARTHI SUNEETHA	7N210004	—
5	217N1S0305	REDDY SATYA VENI	7N210005	R. Satya Veni
6	217N1S0306	VATTIKONDA SUPRIYA	7N210006	V. Supriya

Signature of the Invigilator

Name of the Invigilator: K. Suneetha 17/10/22

Designation: Asst. Professor

Signature of the Principal

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PIN - 521 108

Model of Evaluated Mid Exam

Answer Script

SRK FOUNDATION'S

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KNOWLEDGE IS POWER

SRK FOUNDATION

VIJAYAWADA

2021 - 2022

SESSIONAL BOOK

Name : G. Sandhya Vani

Class : M. pharmacy 1st year sem-II

Roll No. : 217N1S0302

Subject : NOVEL TARGETING DRUG DELIVERY SYSTEMS

Internal	Objective	Subjective	Assignment	Total	Staff Sign	Student Sign
I		30		30		G. Sandhya Vani
II		30		30		G. Sandhya Vani

Final Average : 30

Staff Sign

HOD Sign

I · Mid

Answers

I 10 Marks :-

1A) Nanoparticles :-

→ Nanoparticles are the small particle molecular range to 10 to 1000 ug.

→ Nano particles were the specific size of action coere occurs on the phaomacological activity at specific size of action.

→ The Nano particles were mostly perfeable route of adminstration through I.V, I.M, subceous routes.

PREPARATION of Nanoparticles :-

→ The preparation of Nano particles following different process to prepare a Nanoparticles.

1) Solvent Evaparation method
2) Spontaneous Emulsifing agent method
3) Emulsification diffusion method
4) Dialysis of Emulsification method
5) Solvent Displacement method

① Solvent evapouration method :-

→ Take a drug and polymer at dissolved in organic solvent like Dichloromethane and chloroform.

→ Then polymer solution add to the ageous solution were containing surfactant

→ The solution were agingated to the magenic stirrer to produced emulsion on (O/W) emulsion.

→ Then emulsion pass through the Rollee millee / Soincation millee to reduced the particle size.

→ collect the particle and evapourate the orgina solvent to produced Nanoparticles.

Drug + polymer
↓ surfactants.
Ageous solution.
↓
Emulsification solution.
↓ Ultrasincation / Rollee millee
filter the solution
↓
Evapourated ganic solvent
↓
Nano particles.

② Spanoeuoses Emulsification method:-

→ Drug and polymee at dissolved in immiscible solvent. like acetone on watee. and Dichlor methane.

→ Then add the Emulsification agent to get the solution stabilized and add polymee solution through oqeous phase.

→ To to produced emulsion with conhonous agirgated at pshirree to produced a Nano spheees.

→ And then evapourated they organic solution to finally to get a Nano pashicles.

drug + polymee

↓ immiscible solution.

Add Aqeous solution

↓

Emulsion

↓ agirgated

Nano spheees

↓ evapourated

Nano pashicles.

③ Emulsification diffusion method:-

→ Take a drug and polymer at dissolved miscible solution.

→ Then polymer solution were add to the aqueous solution to get emulsification.

→ Then Emulsifation agent were add to get stabilized on the Emulsion. at agigrated the solution.

→ To continuous stirrer the Nanosphere were produced then evapourated the organic solvent to get Nanoparticles.

Drug + polymer

↓ miscible solvent

water phase

↓ agrigated

Emulsion (o/w)

↓

Nano spheres

↓ evapourate

Nanoparticles.

(4) Dialysis of emulsification method:-

→ The drug and polymer were dissolved in spaelly miscible solution.

→ then the polymer solution add to ageous solution.

→ To add the emulsification agents to get the stabilized of the solution.

→ Then agragated the shirr of solution and add excess of wate to emulsion.

→ Then filter the emulsion. To collect the Nano particles.

Doug + polymer

↓ Spaelly miscible

Add Ageous solution

↓ Emulsifier agent

Emulsion

↓

Add excess of water and filter

↓

Collect the particles

↓ Evaporate

Nanoparticles.

5) solvent Displacement method :-

→ The organic solvent is dissolved in polymer and phosphlipids solution.

→ then organic solvent add to ageous solution. to get the emulsion.

→ Then add the emulsification agent to get the stabilized on they solution to agrigated shir to produced the particle and collect the particles.

→ Evapourated organic solvent by using of heating process. to get Nano particles.

phosphlipids.
↓ organic solvent.
Ageous solution
↓
Emulsion
↓ agrigated.
Nano spheres
↓ By heating.
Evapouration of organic solvent
↓
Nano particles.

Evaluation test of Nano particles

1. particle size
2. Particle surface area
3. surface charge.
4. Percentage yeild.
5. Enbapped efficiency.
6. ~~Den~~ Density
7. molecular weight.
8. In vitro studies.

1. **Particle size** :- The particle size of nanoparticle were mainly important factor of particle distrubution, drug loading, Drug released.

1. particle size is decreases then surface area increases to increased the absorbed.

Different method to estimated the particle size.

1. photo correlation spectroscopy.
2. Scanning Electro magnetic spectroscopy
3. Trammision Electro magentic spectroscopy.

2. **Particle surface are**:-

⇒ The particle surface are were determined the sormetre.

It is measured by the equation.

$$S.A = \frac{6}{\rho d} - 1$$

③ Surface charge:-

→ The surface charge of zeta potential of the 30 V were present on surface of particles.

→ The surface charge zeta potential were agrigated to particle to produce particle to particle agrigated.

④ Percentage yeild :-

$$\text{Percentage yeild} = \frac{\text{Mass of the Nanoparticles}}{\text{No of return of Nanoparticle}} \times 100.$$

⑤ Entrapped efficiency:-

$$\text{Entrapped efficiency} = \frac{\text{mass of Nano particle in drug}}{\text{Total mass of the drug}}$$

⑥ Density :-

→ Density is estimated by the formetre.

→ To estimated of density of the particle size.

⑦ Molecular weight :-

→ The molecular weight were estimated on gel permibaility chroma-tography.

⑧ In-vitro studies :-

→ The in-vitro studies were estimated on different dissolution apparatus.

① diffusion cell method.

② bag diffusion cell method

Diffusion cell method :-

→ Take a small quty of Nanoparticles in the glass sides.

→ And dip in to the gastric fluid contain the flasks.

→ Then set the rpm 50 ant maintain the bath tempeature 37°

→ then different time interval 5 ml of sample were collected and absorbed under UV spechophotometer.

→ Each time replace the fresh solution were added to the flask.

11 5 Marks

1A) Niosomes :-

→ Niosomes are the bilameella layer of phosphipids contains surfactants of 2 phosphopile like hydrophilic and hydrophobic.

→ Hydrophilic surfactants contain inner sides of the vesicles were attached.

→ hydrophobic contains outer sides of the vesicles were present are known as Niosomes.

Evaluation Test for Niosomes

1. particle size / shape.
2. surface charge
3. Encaplusation efficiency / Drug efficiency
4. Releasing processing
5. in-vivo studies.

① particle size & particle shape :- The particle size is important to Loaded of drug, particle distrubtion. to particle were estimated to photo corrleation, tramission electromagnetic spectrometry, scanning electromagnetic spectrometry to estimated the complex size of Particles.

② surface charge:-

→ the surface charge to zeta potential of particle were determined the Henry equation.

Henry equation :-

$$S.C = \frac{ME\ 4\ ph}{s}$$

ME = Magentic electrocharge.

h = velcity.

③ Encaplusation efficiency / Drug efficiency

→ The encaplusation efficiency of their ether injection is high efficiency of entrapped the particles than compared to hand shake method.

→ the encaplusation efficiency of ether injection method to add excess of water and ultra centifugrate.

→ then filter with membrane and collected the supest to measured the absorbance on uv-visible spectroscopy.

→ The absorbance of compound to measured to complex to get the drug absorbance line.

→ How much of the complex formation were estimated to encapsulated efficiency.

④ Releasing processing :-

→ Take a small qty of Niosomes placed in the glass ~~tube~~ slide,

→ Then glass slide to placed in the flask in usp-II types were used to maintain temp 37° ± 5°c at 50 rpm.

→ The flask contain the phosphate buffer solution different time interval collect the sample.

→ And absorbance under UV-visible spectrophotometry to calculated get releasing of drug.

⑤ In-vivo studies :-

→ The In-vivo studies to perform a Animals and human beings.

→ To absorbance of drug on bioavailability and pharmacological activity on the target site.

4A) Targeting drug delivery system :-

→ The Targeting drug delivery system consists of the pharmacological & active drug ~~and~~ medication at a specific site of action on the target organs. But do not effect on the other organs. to ~~reduced~~ reduced the adverse effect.

Ex :- Cancer treatement and therapy to enzyme replacement

EVENTS and Biological process involved in drug targeting :-

1. Cell uptaken and processing
2. Transport across the epthilelal tissue
3. Extravasation
4. Lymaphtic uptake vesicles

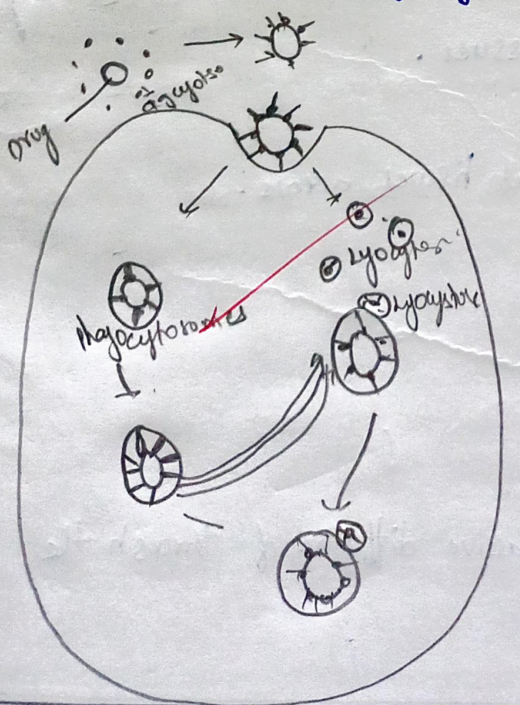
1. cell uptaken and processing :-

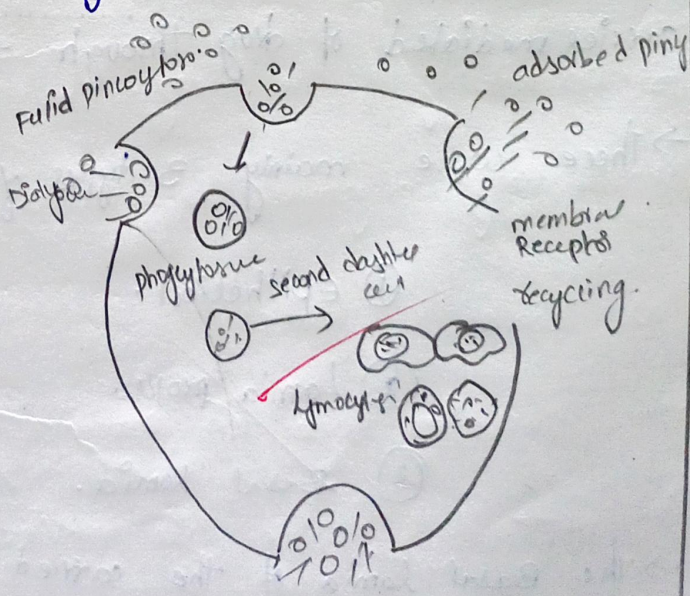
→ they low molar molecular were simple pass through the passive diffusion mechanism.

→ the macro molecular were to form a baseline to difficlut to passive diffusion of molecular.

→ they followed they Endocytosis.

→ Step involved : phagocytoses & pinocytoses.





→ phagocytosis were compared pinocytosis they doesn't ency to uptaken of enzymes.

→ pinocytosis consists of 2 types :- ① fluid based pinocytosis
② Adsorbed pinocytosis.

→ The fluid based pincaytosis to pincaytosis of uptaken of member were Passive diffusion damage the cell. Active to structure modified activity of pinocytosis.

② Transport across the epthelial tissue :-

→ The transport across of the epthelial tissue. To single tissue were contact to other epthelial cell from a tight junction.

→ The Buccal, oral, vaginal, route of adminstration there ~~passive~~ pass through the epthelial tissues.

→ These are formed to join Tight junction of epthelial tissue were they carries mediated of drug through the tissues.

→ There were mainly 3 types of epthelial tissues across.

① Epithelial.
② Lamia propea
③ Basal lamia.

→ the Basal lamia of the carried were passive diffusion of through the juction of tissue.

⑤ Extravasilation :-

→ The some common diseases occurs to dysfuction of the cardio vascu alor it to innce flow the blood to get entre ~~central~~ central circulation system is extra circulation of lymphatic are known as extra vasulation.

→ these were extravasulation consists of factorial follow by

① flow of blood / lymphatic

② pathological vascular or.

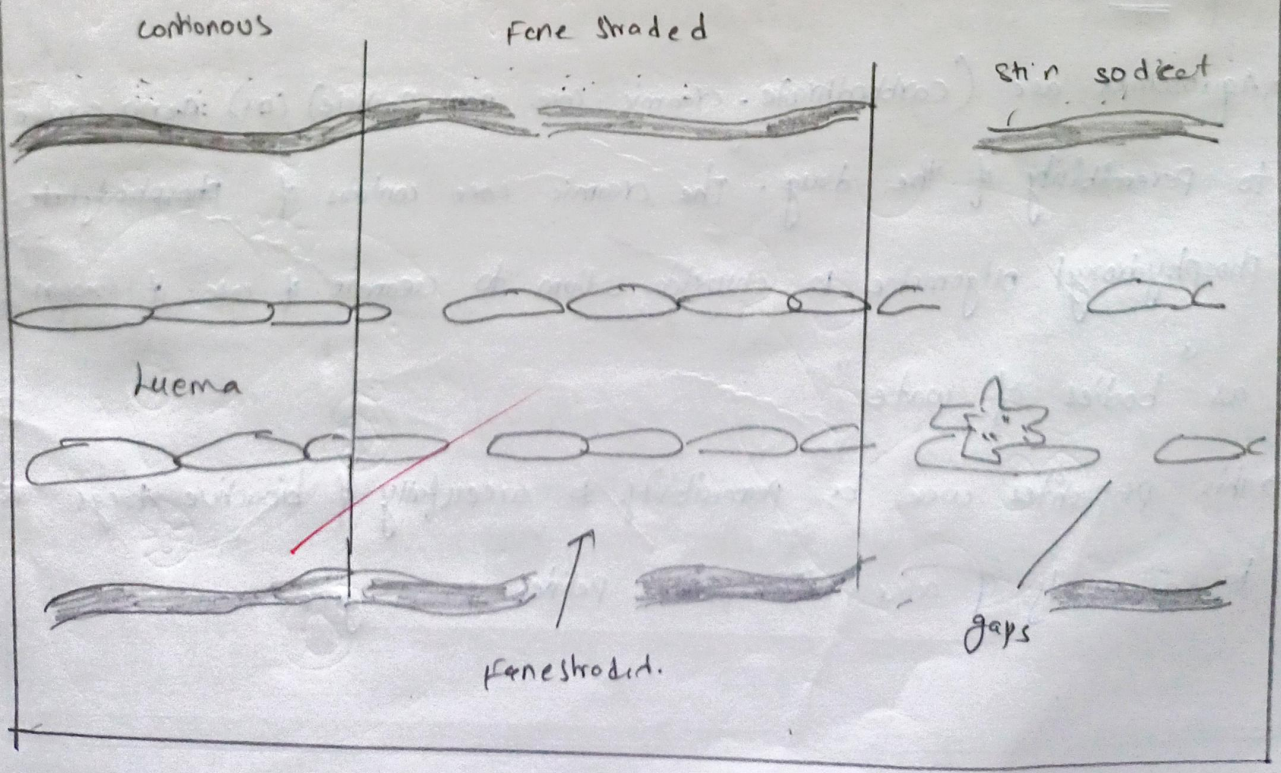
③ phaemacological factors.

→ And also extra vasulation of followed of flow.

① continous

② fene shaded

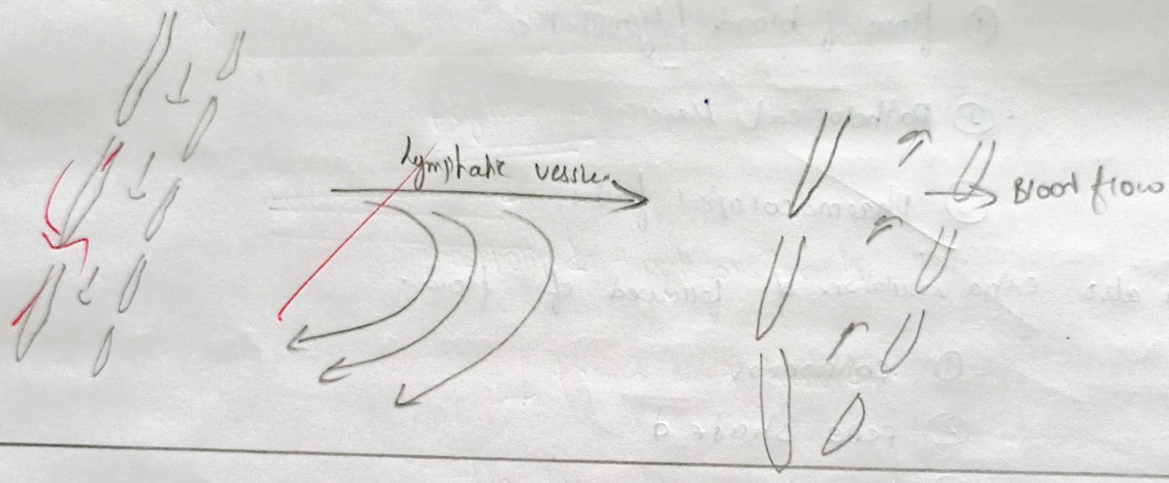
③ sin sodicets.



(9) Lymphatic uptaken vesicles

→ the modified of the extravasculation the blood flow throwm reverse to direct (or) direct on the blood return to lymphathic vesicles.

→ the lymaphatic vesicles followed paracellular, bestinements of blood flow.



(A) Aquasomes

→ Aquosomes are (carbhodhrate. ceramic core nano particle) (or) nano carriers to peremibility of the drug. The ceramic core contains of phosphodytate. phosphydroxyl oligomeine to chloride sodium to ceramic of core of lenocon as "bodies of water"

→ this properities were be permeibility to sucessfully of bioactive drugs to permeability of acid like protein, petides steons, gene etc.

Method of preparation:-

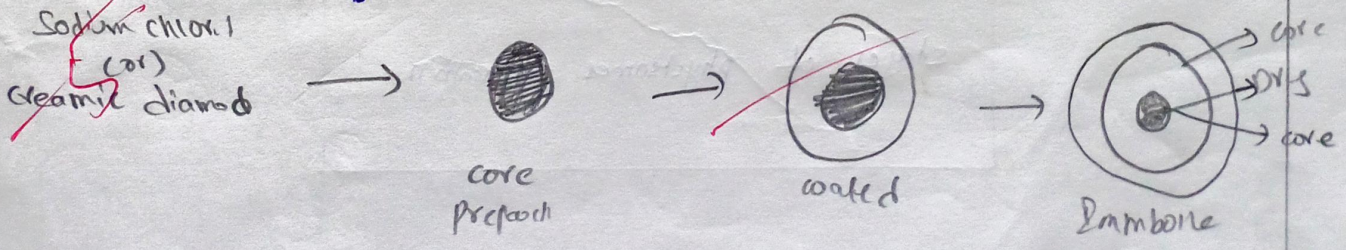
1. core preparation
2. coating core
3. immbolization drug molecuer.

⇒ Core preparation:- the core preparation must be fabriated. The core depends on the selection of core material contains of ceramic diamond were fabriated and they centrifugated to then washed into distilled water to remove sodium chloride form action. After re-supend to pass they filter membrane collect the particle. Two particle must diamond ceramic and calcium chloride.

⇒ Carbadhrate coat:- the core were prepared they coated with carbodhrates surface of core. There were presence of phosphilated and agigated of surface area attached to particles. They are were coated materials were sucrose, pyroxide - phosphate.

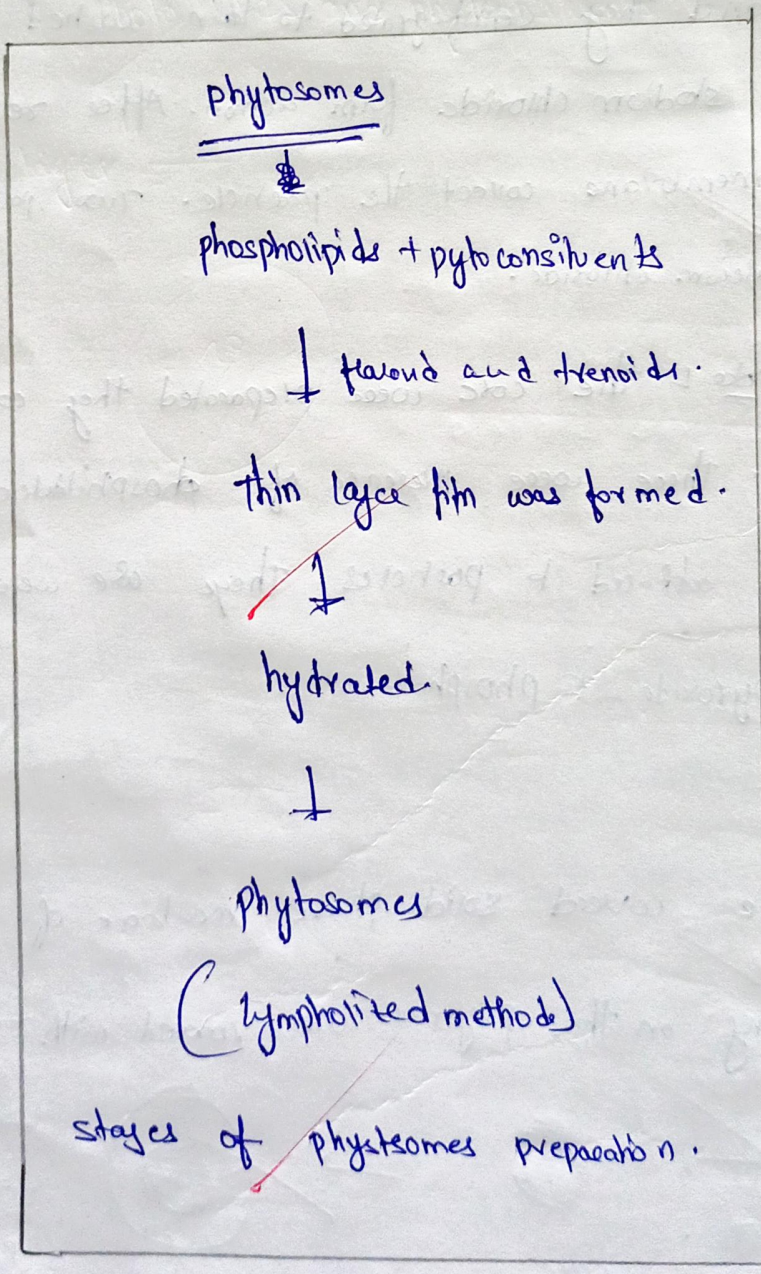
⇒ Imbolization :-

they coating core covered solid phase maubrae of drug should not be denaturing on the polymer were coated with the immbolization.



6A) Preparation of phytosomes

→ the preparation of phytosomes were phospholipids and pyto constituents consists of flavonide and trenoids at the solvent were dearranged Centrifugated of the resuspend of solution were. by the spray method (or) Lympholized methods were the phytosomes were produced.



Evaluation:

① Particle size / zeta potential: The particle size and zeta potential were estimated by the dynamic scanning technique to computerized the complex present & determined the particle size.

② Surface area efficiency: The surface area density of the particle were determined the sometre.

③ Entrapped efficiency:

→ Take a small amount of phytosomes and place on the glass plate on place on flask.

→ To Entrapped efficiey of phytosomes on determined.

④ Trammision electromagetic:

→ The tramission electromagnetic spectropomehy were complex identify the compound of phosphotipide and phytoconstituents. on the mixture of solution.

⑧ Spectroscopy:

→ The spectroscopy they determined the compound present on the mixture by using detected the structure compound.

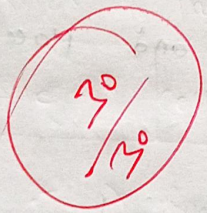
① FTIR spectroscopy method

② NMR spectroscopy method.

① FTIR :- To estimation of accumulation of sample mixture were determined.

② NMR :- The NMR were sepecation of mixture were detected individ adsorbed of phospholipids and phytoconstituents of mixture compound.

→ double thick layer



II - Mid Examination

I 10 Marks :-

1A) Ex-vivo gene therapy :-

Ex-vivo gene therapy :- The ex-vivo gene therapy the defect gene were isolated to out side of body and they introduced to transplated through the patient at the specific site of tissue & cell are known as ex-vivo gene therapy.

The ex-vivo gene therapy following they steps.

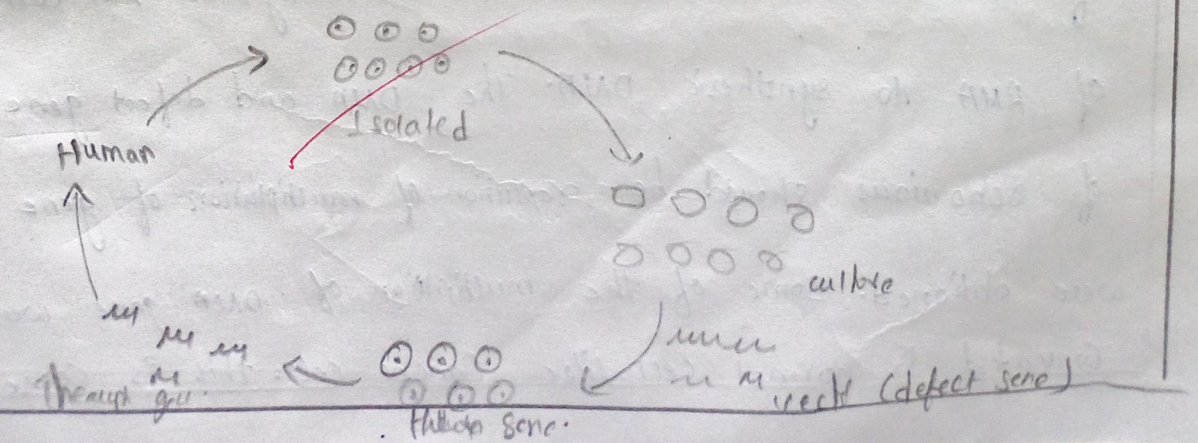
1) To identified the gentic defect of tissue

2) And Isolation of culture

3) To introduced the therauphic gene at corrected site

4) And they corrected therauphic gene were introduced to vector gene.

5) Transplation of the gene into a patient



→ The ex-vivo gene therapy the gene patient defect gene were the isolated and cultured to therauphic gene and transplantion to their patient it not associated as a immunological response.

→ The ex-vivo gene therapy is efficacy treatement in non-toxic, non-immunogical to the patient The ex-vivo gene the used to vectors to transfeed the therauphic gene.

Vectors in gene therapy :-

Vectors are carriers of particles (or) molecule to delivery the specific target tissue & cells by using this vectors. The mainly using vectors are :- 1) viruses

2) Human Artifical Chromosomes.

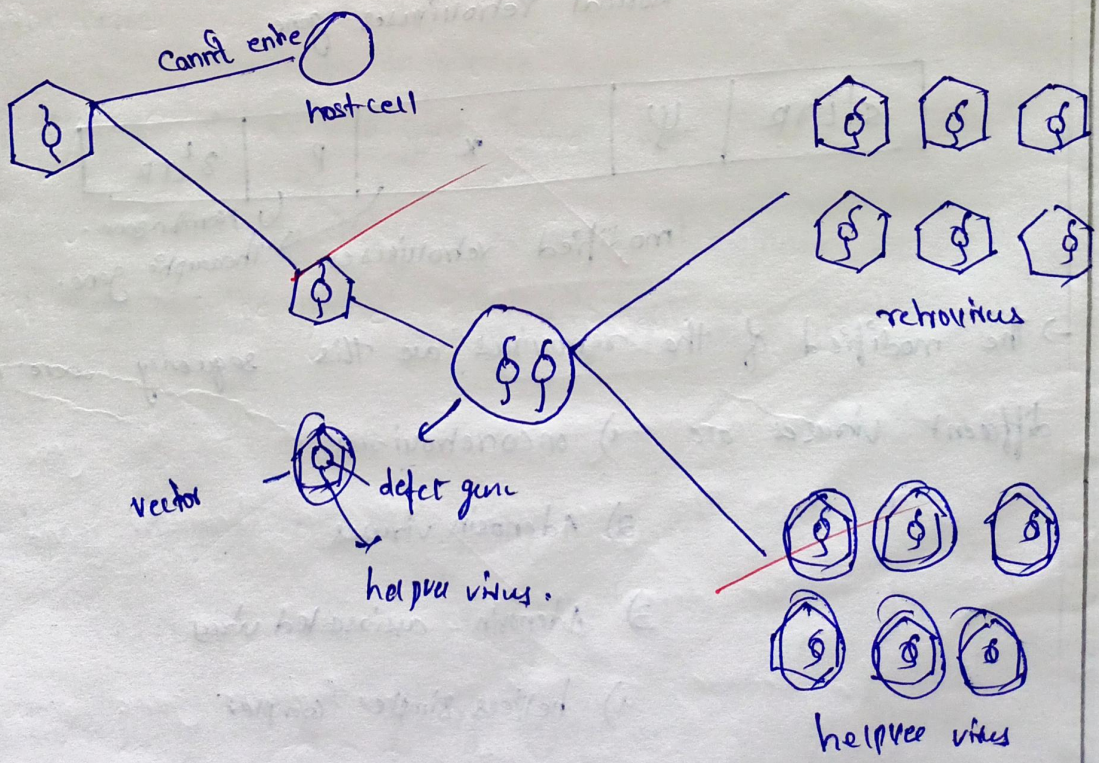
3) Bone narrow cells.

1) Viruses in Vectors :- The vectors most commonly used viruses of retroviruses. The retroviruses to entry into host cell of RNA to synthesis DNA. The DNA and defect gene of retrovirus should be replution of multiplution of gene were obtianed. Some of the multiplition of DNA gene were converted to normal cell like Cancer cell. this is causes

haemaful. that why the retrovirus haemful converts to haemless viruses.

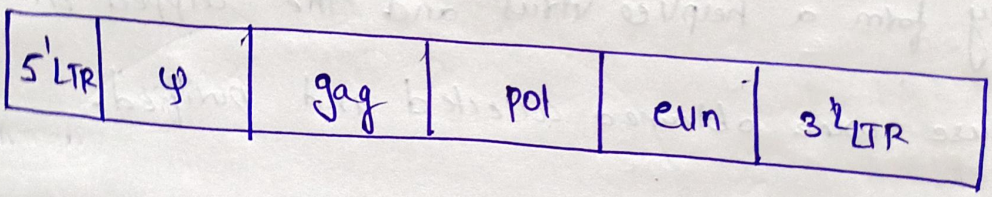
Harmfull to haemless viruses :-

→ The artificial helpver virus to used to converted to haem-ful viruses to haemless viruses. The helpver virus in ceipped to the retrovirus to infection the helpver viruses alone with Vector (defect gene) were entry int host cell. They polaphized the DNA at they form a helpver virus and the ceipped on their retrovirus viruse were obtained collected and purified.

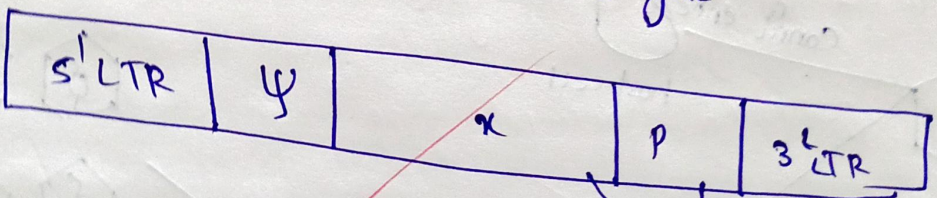


retrovirus in gene therapy:-

→ The retrovirus consists of 5' LTR on the six segement on 5' Long term Repeated and endcoding sequencing of DNA psi (ψ) and gag on the structure of protein pol on the sequence replicated and env on the ocoding of DNA and 3' LTR on the sequency and gag and pol were deleted to promoted the theaupic gene. and encoding on the retrovirus on 3' LTR sequency.



Normal retroliruses gene



modified retroliruses

promoter gene

theaupic gene.

→ the modified of the retrovirus are this sequency were modified in different viruses are

1) oncoretrovirus
2) Adenosin viruses
3) Adenosin - assiosated virus
4) helpees simplex complex

2) Human artifical chromsomes :-

→ The ~~hum~~ Retrovirus and herplex of were most risky gene. The over come this problem human artifical chromsomes were uses to replicated the more number of chromsomes were produced and introduced to the defected gene at speific target tissue to infect on large amount of chromsomes to the gene theeapy.

3) Bone narrow cell

The most common used in theerique on they introduced to gene on the Bone narrow stem cell on their capacity of divided of cells like Blood cells, platlets, were to trasplanted theought the narrow cells.

Selection of example of Adenosine deaminase ex-vivo gene theeapy :-

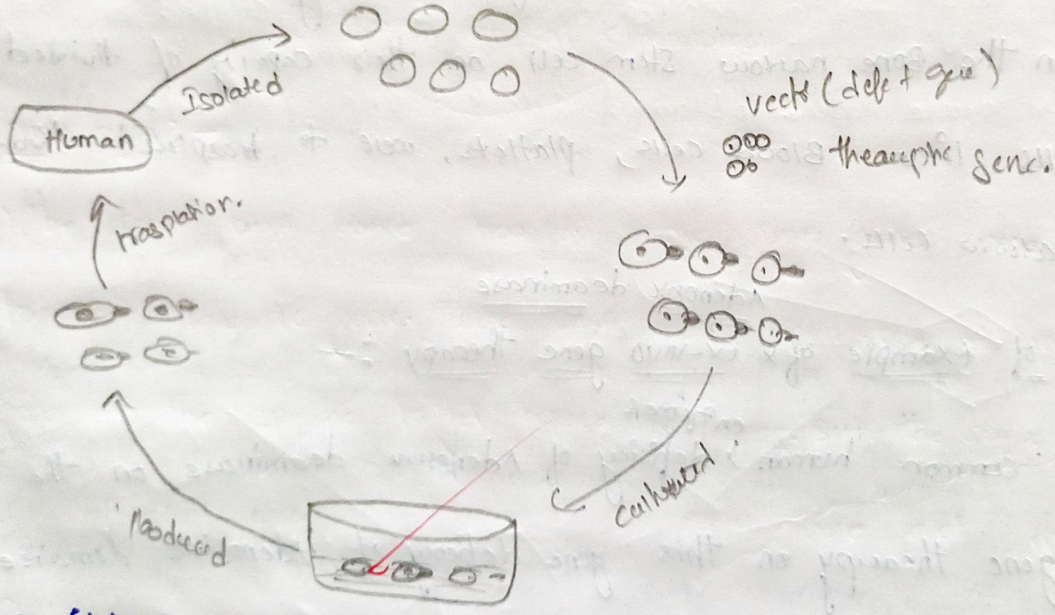
→ The common human enzymes deficicy of Adenosine deaminase on the first gene theeapy on this gene defiency of Adenosine demainse on ex-vivo gene theeapy

Severeal combined Immunological deficiency (SCID):-

→ In the SCID is common defenicy of the dysfunction of macrophage. The lack of T-Lymopytes and B-Lymphytes

defiency. they function of gene defect to reduced the T lympocytes and B lympocytes and they defect gene were isolated to culture they gene and they synthesis of defect gene culture of lympolypes and ↑ transplation to the specific tissue to peoduced the lympoces activity it causes the severeal infection to dead at age of thirty.

Gene Theay of Adersion deaminases :-



→ To defiend the defected gene on the isolated on the gene by using on vector the gene and corrected theaupic gene were incorpted to the defect gene.

→ After the culture the gene on by theaupic gene and thy isolated and purified gene.

→ To again transplation of the patient at the specific site of tissue. to adensine demainse produced the T-lympotes and B-lymptocs on the gene.

stem cell gene theapy :-

→ The embrical cord on the after deivery. at the four day of embrical blood cord their inseted the gene to baby at the function to lympoytes on the produced the T and B lympoytes on the Adensione demaines enzymes.

II

1A) Gene therapy :-

→ The gene therapy is the introduced to theraupetic gene to genetic defect of gene at particaully specific site of tissues and organs.

→ the gene theapy were dysfuction of lungs, livee, skin, Blood are to treat to theraupetic gene at thy somatic gen theapy.

→ the gene theapy mainly consists of 2 types.

① viral gene therapy

② NON - viral gene theapy.

Non-viral gene therapy :-

→ The mainly Non-viral gene therapy were to cost of the viral gen therapy control and the infection of genes.

→ The Non-viral gene therapy were consists of

1. Pure DNA.
2. Lipoplex (or) Lipsomes
3. DNA conjuation.
4. Human artifical chromsomes.

① Pure DNA :-

→ The pure DNA were two (or) more DNA gene were introduced to their therapuic gene. These DNA were replicated at multipvated gene at the specific target tissue (or) cells. But the laye amount of DNA gene were introduced at intracellular were get degraded.

② Lipoplex (or) Lipsomes :-

→ The lipoplex is also called as Lipsomes are more complex of the lipsomeses.

→ they DNA contain the bilipids laye were encripted to the

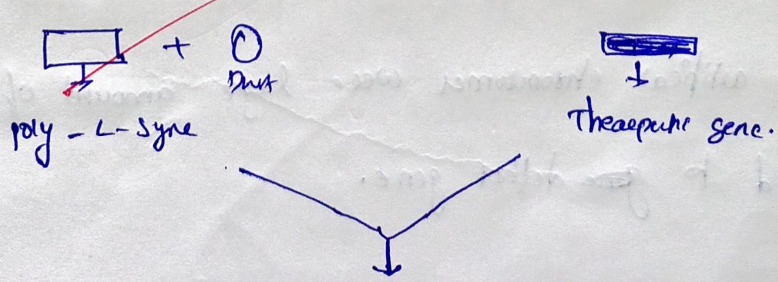
the DNA at the encapped and encoding of the targeting size at get immulogical to degration on the genome on the pancreatly size of the gene. In the Lipoplex is produced the large amount of Lipsomes to Low range transplated to patient.

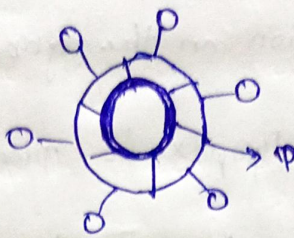
Limitations

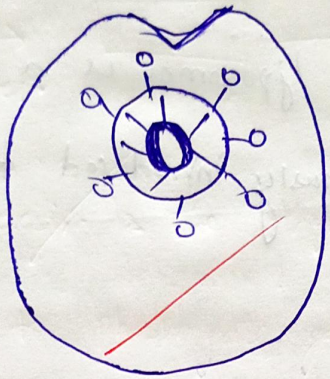
→ The main Limitation of Liposomes is a short life span. this lipsomes were contionusly introduced to the gene theapy.

(5) DNA conjugation

→ The DNA conjugation poly - L-lysine and the theraupthic gene were combine to ~~cong~~ form a conjugated. the poly-L-ysine were recepped to the DNA to endocophytes at they molecles to surround encapped to they DNA moleacles at conjugated at they theraupthic gene were should be provided is avoid of degaration of the enzymes on produced though gene cells.







DNA conjugated

→ Human artifical chromsomes :—

→ The human artifical chromsomes were good vectors to introduced to more multiplath of chromsomes on they injected on they theraupic gene they produced to stop of replicanon of DNA and they cebrion cancer cells. (HIS IV)

→ the human artifical chromsomes were large amount of chromsomes were introduced to ~~gene~~ defect gene.

4A) Gene targeted drug delivery system for Cancer Theeapy :-

Cancee :- In most of them genetic defect on cancee it causes dead. In surgery, chemotheeapy and raditology, gene theapy is New technology to non-toxic to treatement of defect gene in treated of theeapeutic gene in cancee treatement. (Blood, Breast, skin, etc).

Cancee theapy L

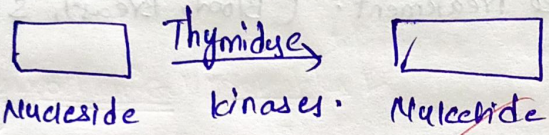
→ In the enzyme p^{53} is mainly to figthed through the cancee cell at molecular weight is 53 at the T-infiltrated deficu (TIP) were fighting to cancee cell and the gene theapy.

Tumor Necrosi's Factor (TNF) :-

→ In Tumour Necrosi's factor deficency of the thymaise kinases enzymes deficency of the macephages and disynfection of LaB-ymphs at ther reduced produced of antibodies on the gene defeted were somatic cell were suppression on the gene on the particalcy tik of tissue and isolated to culture the gene are in-filtration of gene to prevented produced antibodies on the lymphocytes at treatement of skin cancee.

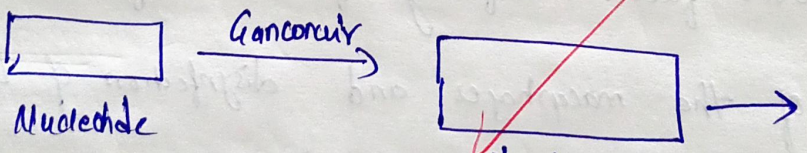
Suicide gene :-

→ In suicide gene were thymidie kinases is react with the Nucleoside to convert to Nucleotides & causes stop of ~~Synthesis~~ systhesis of DNA of cancer growth of cell cancer.



Nucleside Nulceride

A Drug on Gancocur. is the thymidase of DNA multiplied of gene to Nucleride to phosphlyate gancocuir at peoduced converted into they phospholyte gancocur to stp systhesis of DNA replication and also to growth of cancer cells.



Nucleotide

phosphylate
gancocuir

Two gene therapy:-

→ The two gene therapy the both interleukin and thymidase both gene were combined conjugated of gene therapy.

→ The two gene were interleukin 2 were therapic gene and produced the stop of DNA synthesis on their stop growth of cells.

5A) Evaluation of Aersol Drug delivery system:-

I) Flammability and combustion

II) physicochemical properties.

III) Performances

IV) Biological studies.

I) Flamability and Combustion:-

A) Flash point:-

→ The determined of flash point by using the tag cup method.

Method:-

1) Take a cold fusion procedure and the insert into the container. and increasing the temperature at that point evapourate were observed that point is called flash point.

flame extension :-

Method :- ① Take candle burn at room tempeture.

② And a spray a aeesols at 18cm of flame were sprayed.

③ And observed the flame extension and measured it distance with flame extension.

II physicochemical properties :-

① Vapour pressure :- Measured by pressure guages.

② Density :- It is determined by the pycometre.

③ Moisture content :- It is determined by kaush fisher method.

④ Propellents :- It is determined by using a uv-visible spectrophometre.

III Performance :-

① Leakage test :- Take a produced and invert immersed into the water bath maintain 25-35 °C and to any air bubble were observed. If no air bubble is occurs it properly crimped to produced.

② Film test :- To clean arm and dry with towel and spray the aeeosl and observed the film intensity.

(3) sprayer intensity:- Take a produced and immersed into the water bath should maintain 27°c at one-half-hour at water bath.

→ After to spray the valve at 5 sec and weight it and calculated.

weight of valve at + product = A gm

weigh of valve + after spray = B gm.

Dischaege of valve = $\frac{A\ gm + B\ gm}{2}$ = C gm.

(4) Foam test:- The foam span were determined in min to hours of foam life span & determined by 1) visual identification
2) To penetration of dry through the skin.
3) rotation vescity.

IV Biological studies:-

→ The Biological studies were ~~dot~~ toxaiology and theraupetical activity of aerosols were studies by Animals and human beings.

6A) Viral gene transfer system:-

→ The viral gene contains of differents viruses vectors were used in gene therapy in in-vivo gene theapy such viruses are.

① Retroviruses

② Adenosine viruses

③ Adenosine - assiosated viruses

④ Herpex's - somple complex viruses.

Retroviruses :-

→ The retroviruses were synthesis of DNA at 3.5 kb on the vectors used Retrovirus and helper viruses were inflammatory to the gene defect cells and they cell divided and infect to the retriouting of DNA.

→ AT the enegireed gene were estiable to transplated of gene to patients at retroviruses.

Adenosine viruses:-

→ The Adenosine viruses are good viruses it should not be cell division and infect.

→ It Adenosine were cold Adenosine produced were introduced nulceotes at the syntesis on DNA.

→ At the Adensions viruses were adenswn produced the DNA replication of DNA and culture.

→ The gene cultute with vecto (defet gene) and Adersin theaepathe gene.

→ To synthesis of DNA at assioated to praduced synthesis of DNA. at gene trasplation to patient to realased to Adersione on gene.

③ Adenosine - assiosated viruses

→ The Adensione - assiosacted viruses is a single standard and non-pathogiene and small DNA.

→ When the Adensoine were single standard DNA is reached with virus on Adensione double standard DNA and they infected of the gene on the enesitred to modified the Adension - assiocated viruses at infected at lower doses were administrated on the adension viruses.

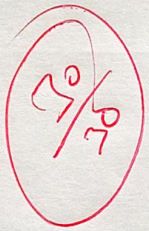
④ Helpeer's complex viruses

→ The retrovirus and Adensoine virus were the both are enesirred to modified the gene trasplation of patient.

→ But helper viruses were synthesis in natural to the body of the chromosomes.

→ They should be synthesis of DNA of virus of deficin gene of natural to habitat to produced the DNA on 153 kb on long chain DNA was transplation to the theraupic gene to helper viruses.

on gene therapy.



Mid exam marks scored by students are entered in the Mother register

PHARMACEUTICS

I M.Pharm / II sem (2021-22)

SUB: Molecular Pharmaceutics (Nano Tech and Targeted DDS) (18PH201T).

SNO	Register NO.	Name of the Student	Theory		Average of two	Practicals	Remarks
			I mid	II mid			
1	217NISO301	chatragadda. kiranmai	24	24	24	NOC	
2	217NISO302	Gundimeda. Sandhya Vani	25	25	25		
3	217NISO303	Tumaty Bhavana	22	22	22		
4	217NISO304	chamarthi Sunectha	0	0	0		
5	217NISO305	Reddy Satya Veni	20	23	22		
6	217NISO306	Vattikonda Supriya	22	23	23		

Entered By: Ch. Mahitha

S. Vasudeva Rao
Exam Section Incharge.

EXAMS-INCHARGE
VIJAYA INSTITUTE
PHARMACEUTICAL SCIENCES FOR WOMEN
ENIKEPADU VIJAYAWADA 521 108

PRINCIPAL
VIJAYA INSTITUTE OF
PHARMACEUTICAL SCIENCES FOR WOMEN
ENIKEPADU, VIJAYAWADA - 521 108

Mid exam marks uploaded to JNTUK University online portal

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

FINAL PDF for M.Pharmacy II Semester Internal marks

College: VIJAYA INSTITUTE OF PHARMACEUICAL SCIENCES FOR WOMEN:7N

Date:05-12-2022

HTNO	SUBJECT	MID_1	MID_2	SEMINAR	FINAL	SUB_TYPE
217N1S0301	MPH201T	24	24	0	24	T
217N1S0302	MPH201T	25	25	0	25	T
217N1S0303	MPH201T	22	22	0	22	T
217N1S0304	MPH201T	0	0	0	0	T
217N1S0305	MPH201T	20	23	0	22	T
217N1S0306	MPH201T	22	23	0	23	T
217N1S0301	MPH202T	24	24	0	24	T
217N1S0302	MPH202T	25	25	0	25	T
217N1S0303	MPH202T	23	23	0	23	T
217N1S0304	MPH202T	0	0	0	0	T
217N1S0305	MPH202T	23	23	0	23	T
217N1S0306	MPH202T	23	23	0	23	T
217N1S0301	MPH203T	24	25	0	25	T
217N1S0302	MPH203T	25	25	0	25	T
217N1S0303	MPH203T	23	24	0	24	T
217N1S0304	MPH203T	0	0	0	0	T
217N1S0305	MPH203T	24	24	0	24	T
217N1S0306	MPH203T	23	25	0	24	T
217N1S0301	MPH204T	24	25	0	25	T
217N1S0302	MPH204T	25	25	0	25	T
217N1S0303	MPH204T	23	24	0	24	T
217N1S0304	MPH204T	0	0	0	0	T
217N1S0305	MPH204T	24	25	0	25	T
217N1S0306	MPH204T	24	25	0	25	T
217N1S0301	MPH205PA	24	24	0	24	L
217N1S0302	MPH205PA	25	25	0	25	L
217N1S0303	MPH205PA	24	23	0	24	L
217N1S0304	MPH205PA	0	0	0	0	L
217N1S0305	MPH205PA	21	22	0	22	L
217N1S0306	MPH205PA	21	22	0	22	L
217N1S0301	MPH205PB	24	24	0	24	L
217N1S0302	MPH205PB	24	24	0	24	L
217N1S0303	MPH205PB	24	23	0	24	L
217N1S0304	MPH205PB	0	0	0	0	L
217N1S0305	MPH205PB	22	22	0	22	L
217N1S0306	MPH205PB	22	22	0	22	L
217N1S0301	MPH206S	0	0	97	97	S
217N1S0302	MPH206S	0	0	98	98	S
217N1S0303	MPH206S	0	0	95	95	S
217N1S0304	MPH206S	0	0	0	0	S
217N1S0305	MPH206S	0	0	90	90	S
217N1S0306	MPH206S	0	0	90	90	S

HTNO	SUBJECT	MID_1	MID_2	SEMINAR	FINAL	SUB_TYPE
217N1S0601	MPL201T	23	24	0	24	T
217N1S0602	MPL201T	24	25	0	25	T
217N1S0603	MPL201T	23	24	0	24	T
217N1S0604	MPL201T	24	25	0	25	T
217N1S0606	MPL201T	24	25	0	25	T
217N1S0608	MPL201T	22	24	0	23	T
217N1S0609	MPL201T	19	23	0	21	T
217N1S0601	MPL202T	23	24	0	24	T
217N1S0602	MPL202T	23	24	0	24	T
217N1S0603	MPL202T	23	24	0	24	T
217N1S0604	MPL202T	22	22	0	22	T
217N1S0606	MPL202T	22	24	0	23	T
217N1S0608	MPL202T	22	23	0	23	T
217N1S0609	MPL202T	23	22	0	23	T
217N1S0601	MPL203T	24	24	0	24	T
217N1S0602	MPL203T	24	25	0	25	T
217N1S0603	MPL203T	25	25	0	25	T
217N1S0604	MPL203T	24	24	0	24	T
217N1S0606	MPL203T	24	25	0	25	T
217N1S0608	MPL203T	23	24	0	24	T
217N1S0609	MPL203T	23	24	0	24	T
217N1S0601	MPL204T	22	23	0	23	T
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217N1S0603	MPL204T	22	22	0	22	T
217N1S0604	MPL204T	21	22	0	22	T
217N1S0606	MPL204T	22	23	0	23	T
217N1S0608	MPL204T	22	22	0	22	T
217N1S0609	MPL204T	21	21	0	21	T
217N1S0601	MPL205PA	21	24	0	23	L
217N1S0602	MPL205PA	21	24	0	23	L
217N1S0603	MPL205PA	20	23	0	22	L
217N1S0604	MPL205PA	20	22	0	21	L
217N1S0606	MPL205PA	20	24	0	22	L
217N1S0608	MPL205PA	19	21	0	20	L
217N1S0609	MPL205PA	19	21	0	20	L
217N1S0601	MPL205PB	22	23	0	23	L
217N1S0602	MPL205PB	24	22	0	23	L
217N1S0603	MPL205PB	24	24	0	24	L
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217N1S0608	MPL205PB	23	23	0	23	L
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217N1S0606	MPL206S	0	0	90	90	S
217N1S0608	MPL206S	0	0	91	91	S
217N1S0609	MPL206S	0	0	92	92	S

Verified by: PRINCIPAL

Controller of Examinations

Date :05-12-2022