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: 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/I Year/M.Pharmacy/2022-23 *Date: 08-12-2022*

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 of I Year M. Pharmacy
Academic year 2022-23

I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	**12.12.2022**		
Induction Classes	12.12.2022	17.11.2022	1W
I Unit of Instruction	19.12.2022	11.02.2023	8W
I Mid Examinations	06.02.2023	11.02.2023	
II Unit of Instructions	13.02.2023	08.04.2023	8W
II Mid Examinations	03.04.2023	08.04.2023	
Preparation & Practicals	10.04.2023	15.04.2023	1W
End Examinations	17.04.2023	29.04.2023	2W
Commencement of II Semester Class Work	**01.05.2023**		
II SEMESTER			
Commencement of Class Work	**01.05.2023**		
I Unit of Instructions	01.05.2023	24.06.2023	8W
I Mid Examinations	26.06.2023	24.06.2023	
II Unit of Instructions	26.06.2023	19.08.2023	8W
II Mid Examinations	14.08.2022	19.08.2023	
Preparation & Practicals	21.08.2023	26.08.2023	1W
End Examinations	28.08.2023	10.09.2023	2W
Commencement of Class Work	**12.09.2023**		

24-12-22

Director Academics & Planning
JNTUK Kakinada

Director
Academic Planning
JNTUK Kakinada

Copy to the Secretary to the Hon'ble Vice Chancellor, JNTUK
Copy to PA to Registrar, JNTUK
Copy to PA to the Registrar, JNTUK
Copy to Director, Internal Audit, JNTUK
Copy to Director, Evaluation, JNTUK

Vijaya Institute of Pharmaceutical Sciences for Women ★ NIKEPADU VIJAYAWADA

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

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 I SEMESTER (PCI REGULATION) I MID EXAMINATIONS, FEBRUARY - 2023

TIME TABLE

TIME: 10:00 AM TO 12:00 NOON

BRANCH & SPECIALIZATION	06-02-2023 (Monday)	07-02-2023 (Tuesday)	08-02-2023 (Wednesday)	09-02-2023 (Thursday)
PHARMACEUTICAL CHEMISTRY (02)	Modern Pharmaceutical Analytical Techniques (**MPC101T**)	Advanced Organic Chemistry –I (**MPC102T**)	Advanced Medicinal Chemistry (**MPC103T**)	Chemistry of Natural Products (**MPC104T**)
PHARMACEUTICS (03)	Modern Pharmaceutical Analytical Techniques (**MPH101T**)	Drug Delivery Systems (**MPH102T**)	Modern Pharmaceutics (**MPH103T**)	Regulatory Affairs (**MPH104T**)
PHARMACOLOGY (06)	Modern Pharmaceutical Analytical Techniques (**MPL101T**)	Advanced Pharmacology-I (**MPL102T**)	Pharmacological and Toxicological Screening Methods-I (**MPL103T**)	Cellular and Molecular Pharmacology (**MPL104T**)
PHARMACOGNOSY (07)	Modern Pharmaceutical Analytical Techniques (**MPG101T**)	Advanced Pharmacognosy-I (**MPG102T**)	Phytochemistry (**MPG103T**)	Industrial Pharmacognostical Technology (**MPG104T**)
PHARMACY PRACTICE (08)	Clinical Pharmacy Practice (**MPP101T**)	Pharmacotherapeutics-I (**MPP102T**)	Hospital & Community Pharmacy (**MPP103T**)	Clinical Research (**MPP104T**)
INDUSTRIAL PHARMACY (09)	Modern Pharmaceutical Analytical Techniques (**MIP101T**)	Pharmaceutical Formulation Development (**MIP102T**)	Novel drug delivery systems (**MIP103T**)	Intellectual Property Rights (**MIP104T**)

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BRANCH & SPECIALIZATION	06-02-2023 (Monday)	07-02-2023 (Tuesday)	08-02-2023 (Wednesday)	09-02-2023 (Thursday)
PHARMACEUTICAL REGULATORY AFFAIRS (13)	Good Regulatory Practices (MRA101T)	Documentation and Regulatory Writing (MRA102T)	Clinical Research Regulations (MRA103T)	Regulations and Legislation for Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals In India and Intellectual Property Rights (MRA104T)
PHARMACY QUALITY ASSURANCE (15)	Modern Pharmaceutical Analytical Techniques (MQA101T)	Quality Management System (MQA102T)	Quality Control and Quality Assurance (MQA103T)	Product Development and Technology Transfer (MQA104T)
PHARMACEUTICAL ANALYSIS (16)	Modern Pharmaceutical Analytical Techniques (MPA101T)	Advanced Pharmaceutical Analysis (MPA102T)	Pharmaceutical Validation (MPA103T)	Food Analysis (MPA104T)

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

28/1/23
PRINCIPAL
VIJAYA INSTITUTE OF
PHARMACEUTICAL SCIENCES FOR WOMEN
ENIKEPADU, VIJAYAWADA-521 108

Controller of Examinations (PG)

Date: 27-01-2023

S. Vachaka
28/01/2023

VIJAYA INSTITUTE OF PHARMACEUTICAL SCIENCES FOR WOMEN
ENIKEPADU
VIJAYAWADA

VIJAYA INSTITUTE OF PHARMCEUTICAL SCIENCES FOR WOMEN
ENIKEPADU, VIJAYAWADA – 521108.

I M. Pharm I Sem I Mid Exams Invigilation Duties, Feb-2023

Timings : 10:00 AM TO 12:00 PM

Exam Dates	Staff Name	Staff Signature
06.02.2023 (Monday)	Mrs. K. V. R. Rajeswari	
07.02.2023 (Tuesday)	Ms. B. Lekhya	
08.02.2023 (Wednesday)	Dr. B. Dhanush	
09.02.2023 (Thursday)	Mrs. K. V. R. Rajeswari	

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

Vijaya Institute of Pharmaceutical Sciences for Women
ENIKEPADU
VIJAYAWADA

Principal
(Dr. K. Padmalatha)
PRINCIPAL
VIJAYA INSTITUTE OF
PHARMACEUTICAL SCIENCES FOR WOMEN
ENIKEPADU, VIJAYAWADA - 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

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

I MID

ATTENDANCE SHEET FOR I MID EXAMINATIONS

COURSE: M. Pharm

Date of Examination: 08.02.23 Time: 10.00 AM TO 12.00 PM

Room No: 01

Subject Name: Pharmacological & Toxicological Screening Methods-I

Subject Code: MPL103T

No. of Students Present: 02

No. of Students Absent: 01

S.No.	Hall Ticket No.	Name of the Student	Answer Booklet Serial No.	Signature of the Student
1	227N1S0601	BOYALAPALLI PRASANNA	7N220001	B. Prasanna
2	227N1S0602	CHALAMALA RAMYANJALI	7N220002	Ch. Ramyanjali
3	227N1S0603	SHAIK HAFSA	7N220003	— ABSENT —

Signature of the Invigilator: B. Dhanush

Name of the Invigilator: B. DHANUSH.

Designation: Asst. Professor

VIJAYA INSTITUTE OF PHARMACEUTICAL SCIENCES FOR WOMEN ENIKEPADU VIJAYAWADA

Signature of the Principal

PRINCIPAL

VIJAYA INSTITUTE O.

PHARMACEUTICAL SCIENCES FOR WOMEN

NIKEPADU, VIJAYAWADA - 521 108

Model of Evaluated Mid Exam

Answer Script

SRK FOUNDATION'S

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KNOWLEDGE IS POWER

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20~~22~~ - 20~~23~~

SESSIONAL BOOK

Name : B. Prasanna

Class : 1st M. pharmacy [pharmacology dept]

Roll No. : 227N1S0601

Subject : Pharmacological & Toxicological Screening models - I

Internal	Objective	Subjective	Assignment	Total	Staff Sign	Student Sign
I		21		21	NKSN	B. Prasanna
II		23½		23½	NKSN	B. Prasanna

Final Average : 22

NCSNeelaja

Staff Sign

HOD Sign

I M.pharmacy | I sem I mid Examination

Su : Pharmacol 'cal & Toxicolo 'cal Screenin gn

I

1) Predinical Evaluation of drugs for Alzheimer's disease.

21/30

In vitro

1) Adenylcyclase activity.

In vivo

1) Step down
2) Two compartment Test
3) Radial arm maze Study
4) Water maze Study.

Step down

Mice or rat either Sex

↓

Test Std | Test compound orally

↓

Animal is placed on a platform containing rectangular box with floor grids, these grids are attached to Shocking device to deliver the foot shock.

↓

Measure Step down assay | latency period.

↓

After finished the experiment the animal Step down or remain is recorded.

Two Compartment Test

Mice & rat either Sex

↓

It should contain 50x50 cm rectangular box with removal ceiling 35° cm this is connected with small box 15x15² cm with black walls.

↓

These two compartments has transparent slight door is present between of the compartments.

↓

Illuminating with 100 w bulb at the centre of large Compartment

↓

latency is measured.

Radial arm maze Study

Mice & rat either Sex

↓

apparatus is wooden, consists elevated as 8 radial arm maze with 56 long length, 5 cm wide, 2 cm height

↓

Animal is placed on the apparatus & food is attached to maze.

↓

During test animal food should be provide per day at once, wgt should be maintained at 85.

↓

Trained the animals to run in maze to catch the pellets.

↓

Training is terminated after 8 choices, the animal obtained maximum of pellets with minimum of errors

↓

Errors is measure.

Water maze study

Apparatur is circular & it is divided | distributed into 4 parts served as starting point. water tank filled with 20° depth & 25°c water

↓

This apparatus is divided into 4 quardants, small quardant is fixed in the center of any one of the quardant

↓

The quardant (small) is placed on entire training secessions.

↓

The animal is allow in water upto 60-90 sec to findout the quardant.

↓

Trained rats are identify the quardant in less than 10 sec.

↓

After experiment, quardant is removed & allow the animal in water to swim for 30 seconds.

Screening Procedures for parasympathomimetic drugs

In vitro

1) Guinea pig Ileum.
2) Isolated eye of rodent.
3) To detect anticholinesterase activity.

In vivo

1) To detect anticholinesterase activity in cat.

Guinea pig Ileum

Guinea pig (200-500 gm)

↓

Killed by Stunning

↓

Abdomen cut & mid incision

↓

Remove pancreas | Intestine

↓

Intestine is cut half & pass through glass is inserted into it.

↓

Tyrode Solution is passed through & effluent the free of Substances.

↓

Cut the pieces into (2-3) cm.

↓

one side piece is attached to tissue clamp & inserted into 10-20 ml of tissue bath & attached to writer lever.

↓

writer lever produces contractions 10-20 times.

↓

Ach (0.01µg) is added.

↓

It produces contractions of 70-90% of maximal responses.

To detect anticholinesterase activity

Thiolester Ach is used as substrate

↓

To detect the inhibition of enzyme activity

2.89 ml of phosphate buffer.

10 ml Sample.

0.1ml DTNB.

↓

All are mixed & incubate for 10 minutes

↓

Add Substrate & measure the Spectrometry by using Spectrometry.

To detect anticholinesterase in cat

Cat (1-2 kg)

↓

Anesthesized with pentobarbitone.

↓

Test compound IV administer.

↓

Caratoid artery is canulated to detect BP

↓

occur different doses at anti cholinesterase activity as follows.

at dose X: No detectable effects

at dose 2X: Slightly bronchial & fall in BP to 10-20 mm Hg.

at dose 4X: Fall in BP to 50-100 mm Hg it leads to

1) Initial ↑se in respiration & ↓se in respiration.
2) Salivary & Bronchial Secretions Seen.
3) Urination.

II

3) Screening procedures for parkinson's disease

In vitro

1) Experiments using rats Straital Slices.
2) Dopamine Stimulated ~~adenyl~~ anticholinesterase activity

In vivo

1) Tremorine & Oxetremorine in rats/mice.
2) MPTP model in monkeys.
3) Reserpine antagonism in mice.
4) 6-Hydroxy dopamine induced neostraital lises in rats

Tremorine & oxitremorine in rats / mice

Group of 6-10 male CMR1 mice
(18-22 g)

↓

Test compound / Standard is given orally.

↓

After 24 hrs Oxitremorine (0.5 mg/kg) Subcutaneously administer.

↓

Rectal Temperature is measured before administration & 1, 2, 4, 6 hrs after administration.

↓

Record the signs like tremors, Stupus etc...).

MPTP model in monkeys

8 Adult rhesus monkeys
(5-8 kg)

↓

Over a period of 8-10 days 2% doses of MPTP is administered.

↓

Developed parkinson's Symptoms.

↓

This is reversible (No symptoms) when test compound L-Dopa is administered

↓

Check the actions / signs.

Reserpine antagonism in mice.

Take NMRI mice (20-25 g)

↓

Administer drug IP (10 mg/kg)

↓

Reserpine (0.1 mg/kg)

↓

Observation for 24 hrs.

↓ Reserpine inject.

produce Horizontal movements for every 10 minutes

↓

Rearing & Grooming is recorded by expert observer.

4 Preclinical Screening Principles of Sympatholytic drug

In vitro

1) Nictating membrane prolapse in cats.
2) α & β adrenergic antagonism of mouse eye.

In vivo

1) Vas deference of rat
2) Straited Strip of cat
3) To access the β_1 & β_2 adrenoreceptors of agonism & antagonism.

Vas deference of rat

Rat (1 - 2.5 gm)

↓

killed by Stunning

↓

Cut the abdomen & make the midline incision to dissect the Vas deference.

↓

Tissue is Suspend in tissue bath (tyrode, aerated, 35°C)

↓

NA is added

↓

phentolamine is used as Standard (% reduction of activity of adrenoreceptors.

Straital Strip of cat

Cat (2 - 3 kg)

↓

Anesthesized.

↓

Suspended in organ bath (Krebs, aerated, 38°C).

↓

Tension is added 0.5 mg, magnitude 5 - 6 times, then NA/A is added then after add test drug.

Phentolamine is used as Standard drug (% reduction of activation of agonism & antagonism.

Niciating membrane prolapse in cats

Cats (Group 6-8 animals)
(2-3 kg)
↓
Anesthesized with pentobarbitone.
↓
Test compound adrenaline is administered
↓
It produces the relaxant activity
↓
Compare the animals with Std.
↓
Continue the process with other animals with different concentrations.

3

1. Anesthesia

It is the drug to produce reversible loss of Sensation & Consiousness.

→ Anesthesia is done by experts in lab.
→ So many anesthitics are available mainly used
1) Inhalatn anesthetics.
2) Intravenous anesthetics.
→ When anesthesia is administer the animal is paralysed for some-time with artificial respiration is produced

→ This is done at Experimental lab.
→ Tension is avoid by patient, animal also feels fearless.
→ Adequate results are not come due to tension.
→ Care should be taken by expertian.
→ He/she has experienced in cutting skills/ insertion skills.
→ Handle the animal with appropriate care.
→ Cruelty is avoid deal carefully.
→ Once animal is anesthesized incision is made & cut, take the part it should be placed at tissue suspended bath (Organ bath).
→ Done the stitches atmost care.
→ Provide the nutritiond food & saline liquids to recovery of animal.
→ Tablets will be diesolve & given throagh Oral route.
→ If any cases it should not recover & unhealthy it should be immediately done by euthanasia.

Euthanasia

→ The animal is gentle killing & death is called euthanasia.
→ This is done for experimental work & research &

fermentation of organs. in labs.
→ This should be done by painless.
→ Euthaneria is done by ethical process
→ Euthaneria is not in cruelty form.
→ Experiments are done almost without harming/euthaneria.
→ For euthaneria it has some rules & regulations.
→ Reason is compulsory for euthaneria is done.
→ maintain records

6. Different Strains and Species of laboratory animals

Rat:

→ This the small animal in laboratory it should be breed equally. very sensitive to drugs.
→ Two inbred rats are used.
  a) wistar rats
  b) Albino rats

wistar rats

→ Head is wide, tail is long which is longer than body

Albino rats

→ Head is long, narrow body tail is equal to body.

Some characteristics of rats

→ Rats has doesn't vomiting center that's why it can't vomit.
→ No gall bladder.

→ Mainly used for tetratogenicity, mutagenicity & Carcinogenicity.

Mouse

→ This is the smallest animal in laboratory, available as cheap.
→ Sensitive to drugs.
→ Determine by using teratogenicity.

Guinea pig

→ This is the docile & deal carefully.
→ It is sensitive to histamines & produce Severe bronchoconstrictn & asphyxia.
→ used in bioassay of digitalis & local anesthetics.
→ used in inflammatory drugs identificatn.

Hammster

Two types hammsters are present
1) Golden hammster.
2) Crusene hammster.

This is chunky body, short legs, 5 toes in back, 4 toes in front.

Golden hammster is used for virology, cancer.
Crusene hammster is used for antidiabetic, antipyretic.

→ mainly for immunology.

Rabbit

Newzealand white rabbit is mostly used.
It has long ears.
→ It is used for carcinogenicity & tetratogenicity.

→ Mainly used for bioassay of digitalis.

Monkey

→ This is very resemble to human being physically. Structurally it resembles man.
→ This brain is close to human brain.
→ mainly employed for Neuro disorders.

Cat

Cat is used for BP testing agents (Anti hypertensives) morphine is produce unconsciousness in cat
→ Caratoid artery is fixed to measure the bp.

Frog

→ It is aquatic amphibian animal.
→ mainly used for Neuro muscular junction problems

Transgenic animals

Mouse

→ The first animal
→ This is done by altering the gene of mother & insert into baby rat (egg), it should produce large size baby (size of mouse) than mother.

Goat

→ Take goat milk & make them milk for Orphan babies to feed.

Sheep : (Dolly is the first clone baby).

→ wool is used for making textiles, pharmaceutical uses

Chicken

→ In ovum an new molecule is inserted large size hen is

Produce & it should be produce more eggs.

Fish

→ Zebra fishes are newly produced.

Calf, Buffalo

→ These milk are used for feed for in many products

I M. Pharmacy / I Sem II mid Exams

Sub: Pharmacological and Toxicological Screening methods - I

11/

2342/30

2. Screening methods of Antidiabetic and diuretic agents

1) Pancreatamy of dogs
2) Alloxan induced diabetics (Rabbit, Rat, Dog)
3) Streptozotocin induced diabetics (Rat)
4) Hormone induced Diabetic mellitus

Pancreatamy of Dogs

Male Beagil Dogs (12 - 16 kg) → Anaesthesized with Pento Sodium barbitone IV (30 mg/kg) & placed on back → Open abdomine with care and with proper Surgical Skills

↓

Pancreas is brought into operating field & Separate the mesentric attachments

↓

Small vessels of pancreas are ligated

↓

Both ends of pancreas are ligated

↓

The pyloric & splenic parts of pancreas are delievered into wounds.

↓

The mysentry body of pancreas & tail is Separated & cut

↓

After 19 - 20 hrs pancreas is dissected out by Sacrificing the animal

↓

The pancreatic tissue of Splenic vessel is ligated

↓

The pancreatic branch of Splenic vessels are doubly ligated

↓

The pancreas is the only one part is to be dissected

↓

Finally pancreas is to be dissected out → The abdominal wall & Superficial layer of Skin is Sutured. → The drug dog is treated with post operative Care.

↓

1 litre of glucose & 10 IU of retard Insulin & IP of mekamizol.

← 3rd day give milk & turn to normal feed.
Insulin is replaced with retard insulin.

Alloxan induced diabetics

Rabbit → New Zealand rabbits (2.5 - 4 kg) → Alloxan monohydrate (5 kg/100 ml) is Infused 100 - 150 mg/kg IV → 90% of animals are hypoglycemic

↓

Drug is used for further Screening.

~~Albino~~ so

Rat → Albino rats (150 - 200g) → Alloxan monohydrate 100 - 175 mg/kg → Hyperglycemic

Dog → Male Beagil rats (12 - 16 kg) → IV 60 mg/kg Alloxan monohydrate → Treated with glucose & Canned food

↓

Treated with single Sc retard Insulin.

Streptozotocin induced diabetics

Albino rats (150 - 200g) → Test drug administer through IV (60 mg/kg) → Initially increase glucose level in 150 - 200 mm Hg bcz of increase blood volume in 3 hrs.

↓

After 5 - 4 hrs glucose levels increase because of increase in serum of glucose.

Severity & Symptoms of diabetics are depend on dose of Streptozotocin.

After 12-14 days of Steady State concentration the animals are undergo for Screening tests.

Hormone induced diabetics

Deoxymethasone (Long acting Corticosteroid) → IV 2.5 mg/kg → 200m of diabetics

3 Anti cancer drugs

In vitro

1) Triptan blue viability test
2) Alamar blue assay.

In vivo

→ Liver cancer induced by diethyl amino benzene
→ Carcinogen induced models
→ Viral infection models
→ Transplantation models
→ Hollow fibre

Liver Cancer induced by diethyl amino benzene

Rats (150-800g) → divided into 2 groups
→ Each group has 5 animals (Test & control)
→ For control give vehicle (distilled water)
→ For test give only drugs DNMB & TPA
↓
After 6 hrs Drugs treated
↓
Observe
TPA 0.2ml for 12 weeks
↓
After 4-5 months
↓
Dissed liver & See the liver colour
↓
In 15th week Liver turns into grey colour
→ Any patches is seen is checked.
→ Identify liver maligracy
→ Test by ANOVA
→ Note values & parameters

Carcinogen induced models

Mice only for single dose of 2.5 µg of DNMB in acetone & 0-10 µg of TPA in 0.2 ml in acetone

↓

Percent of carcinogen incidence & multiplicity of treatment is compared with DNMB controls.

↓

Test Compound is given through intraperitoneally & oral.

↓

The Percent of carcinogen is usually 100% of DNMB controls.

↓

DNMB alone give it induce Carcinogens.

↓

Reduce carcinogen is identify by reduct^{n} of symptoms & efficacy of drug.

Viral infect^{n} models

→ The mouse mammary Tumour virus (MMTV) is isolated in Jackson laboratory identified as "Non-Chromosomal factor". & produce tumour in $C_{3}H_{3}$ Strain in mice.

→ Some Viruses Cause Cancer via integeat^{n} in Certain cells.

→ Some Viruses cause tumour by oncogenes.

Abelson mikuraine leukemia Virus.

Monoley mikuraine Sarcoma Virus.

→ Engineering Viruses are used now routienly for inducing Cancer.

Transplantat^{n} Virus (models)

→ Tumour cells or tissues are implanted in a host mouse.

→ Ectopic - Implanted organ than in different organ.

Orthotopic - Implanted organ into analogus organ into original tumour.

In vivo hollow fibre assay :

→ In vivo Screening tool introduced in 1955 by NCI.
→ 12 human tumour cell lines (Breast, cancer, colon, malemia & ovary)
→ After in vivo treatment fibres are removed & analysed in vitro.
→ In vivo assessed availability.

4. Preclinical Screening Principles of antiasthamatic drugs

In vitro

1) Isolated Guinea pig lung Strips.
2) Isolated Guinea pig Trachea.

In vivo

1) Bronchospasmolytic activity in Guinea pig
2) Broncho overactivity of Guinea pig.

Isolated Guinea pig Trachea.

Albino Guinea pig
(300-350g)
↓
Sacrificed with CO_2 necrosis.
↓
Entire Trachea is removed & cut into individual rings.

↓

All rings are held together by silk / thread.

↓

Mounted to Organ bath containing Kreb's Solution & buffer Solution at 37°C & tension is added.

↓

Bath is bubbled by adding carbogen

↓

Isometric contractile is measured by using polygraph.

↓

Spasmogen is added.

↓

Test drug is added (Isopranil 1 mg/kg)

↓

Obtain Constant contractile add Spasmogen

↓

Add test drug

↓

Measure constant contractile obtain at maximum level.

Bronchospasmolytic activity in Guinea pig

Male Guinea pig
(200 - 300 g)

↓

Anesthesized with pentobarbitone.

↓

Anesthesiged is not much deep avoid Spontaneous respiratn

↓

Jugular vein is cannulated by for test drug & Spasmogen.

↓

Caratoid artery is measured for bp

↓

Trachea is cannulated by two way Trachea

1) one trachea for transducer bp
2) one trachea for respiratn

↓

Artifical aersol is pumped at 190-200 mm in 1 min/stroke.

↓

Measure & record the lung which is not taken air

↓

Add Spasmogen (Histamine, HCl)

↓

Contractile is produced & by adding Spasmogen & test drug in 10-15 mints interval.

Broncho overactivity of Guinea pig:

Albino Guinea pig (300-350g)

↓

It consists of Inhalation aerosol boxes A, B & C.

↓

Rat is placed in box A & treated with aerosol & the ultrasound nebuliser.

↓

Box B is passed way to Box C.

↓

In Box C produce 0.1% Solution of Hcl & histamine with ultrasound nebuliser.

↓

produce convulsions.

↓

Immediately remove animals from box.

5. Pharmacological Screening methods of antiulcer drugs

1) Pyrdic ligation of rats.
2) Stress ulcer models
   a) Restrain induced ulcers.
   b) cold water immersion ulcers.
   c) Stress & NSAIDS induced ulcers
   d) Swimming, Stress ulcers.
3) Histamine induced gastric ulcers.
4) Acetic acid induced gastric ulcers.
5) Reserpine induced chronic gastric ulcers.

1) Pyloric ligatn of Rats

Wistar rats (150-200 g) → Fasting for 46 hrs but given water → Anesthesized by ether

↓

1 inch abdominal incision below xiphoid process

↓

Pylorous is lifted carefully without disturbing the blood supply

↓

Stomach is open along greater curvature → Contents of Stomach are drained out by graduated centrifuge.

↓

Acetic acid 0.01N Nacl is used to centrifuge.

↓

Measure the Severity of lesions.

↓

$$U_I = U_N + U_S + U_p \times 10^{-1}$$

2) Stress ulcer models

a) Reserpine Strain induced ulcers

Albino rats (150-200 g) → Fasted for 36 hours → Test compound administer Orally

↓

Stomach is open & dissected out

↓

Measure gastric ulcers by Straining animal.

↓

Keep Straining in 24 hrs

b) Cold-water immersion induced ulcers.

Wistar rats (150-200g) → Fasted for 16 hours → Test Compound administer

↓

animals are dipped into water by restraining Vertically at 22°c for 1 hour.

↓

Evan blue is (30 mg/kg) is given by tail vein

↓

Provide formal Saline overnight → Next day dissect out by open Stomach along greater curvature

↓

Wash with warm water

↓

Lesions are measured by helping of evan blue colour.

c) Stress & NSAIDS induced ulcers

Wistar rats (150-200g) → Fasted for 24-36 hours → Test drug administer.

↓

Diclofenac (or) Aspirin 0.01 N. in 30 ml of injectn (IV)

↓

Stomach is open along greater Curvature

↓

Measure lesions of gastric ulcers.

d) Swimming induced ulcers

Albino rats (170-200 g) → Fasted for 48 hrs but given water → ~~Administer test drug~~ & Animals are forced to swim in deep tube 25°C for 5 hrs

↓

After 5-7 hrs animals are Strained

↓

Stomach is Open along greater curvature

↓

Lesions is measured as

0 - Lesions is absent
1 - Lesions < 1 mm
2 - Lesions < 1-2 mm
3 - Lesions < 2-4 mm
5 - Lesions < more than 4 mm

Histamine induced gastric ulcers

~~Wist~~ Guinea pig (200-250 g) → Fasting for 16 hrs → Histamine inject^n IV → To prevent Histamine toxicity ethazine is given before & after drug treatment

↓

Stomach is open along greater curvature

↓

lesions is measured

Acetic acid induced gastric ulcers -

wistar rats (150-200 gms) → fasted for 24 hrs → Acetic acid (0.01) in 30 ml of ingedh is given at mucosomal layer of Stomach.

↓

Produce gastric ulcers by penetrating.

→ These are typically Chronic ulcers regenerated with healing.

Reserpine induced chronic ulcers -

wistar rats (150-200 g) → Provide Std diet → Before expt withdrawn liquid taken

↓

Given test drug Reserpine IV.

→ 1 mg/kg is given

↓

Stomach is open along greater curvature & Measure Severity of lesions.

I

2. Pharmacological Screening methods of antihypertensive agents and hepatoprotective drugs

In vivo

1) Two kidney 1 clip method in SD rats
2) One kidney 1 clip method in SD rats
3) Salt sensitive dahl rats
4) Fructose induced hypertension in wistar rats
5) DOCA Salt rats
6) Tail cuff method.

Two kidney 1 clip method in Sprague Drawley rats

→ The artery is constricted on only one side with the other artery left untouched.
→ This results in Sustained increase in BP.
→ Initially, Salt & water retentn is more because the contact of other kidney being intact.
→ In this situatn the kidney resultant in angiotensin dependent.
→ the increased angiotensin II is released from aldosterone from adrenal medulla.
→ Salt & water retn is more
→ This results in decrease renin productn
→ This is a volume dependent process (+ty ertension)

One kidney 1 clip method in SD rat

Here one artery is constricted by only one side other is removed

↓

Initially within a few hours bp increase.

↓

There is no constriction of conora lateral kidney & no pressure diuresis & natriuresis.

↓

Salt & H_2O retention is more

↓

plasma renin usually normal

↓

Hypertension is volume dependent.

Salt Sensitive dahl rats

Rats (150-200g) → Feed with excess Salt contain H_2O & food → For Test group upto 1 month provide this food → Sacrifice → Measure bp → before & after drug treatment

Measure Organ Size increase (or) damage the organ ← Sacrifice the test group animals ←

Fructose induced hypertension in wistar rats

Wistar rats (150-200 g) → feed with Canned food → Produce Insulin resistance → Observe ↓ fluid intake, Drinking behaviour, Body weight ↓ Test drug administer → Measure bp, Insulin & Triglycerides before & after drug treatment → Test by ANOVA

DOCA Salt rats

wistar rats (180-200 g) → One kidney is removed → Provide Salt content water upto 1 month → Drinking H_2O replaced with Saline ↓ Increase BP ↓ Measure before & after drug treatment

Tail cuff method

Charles River male rats (300-350 g) → Anaesthesized by IP 0.6 ml of 4% of Chloral hydrate → Produce artifical hypertension by expose both kidneys & place the clips on both renal arteries

→ After 5-6 weeks hypertension is attained → A inflatable wire cuff is attached at tail base.

↓

inflatable cuff is approximately reach 300 mm Hg.

↓

Pressure of inflatable is slowly removed & bp is detected & record in polygraph

↓

Administer test drug IP for 3 times at in alternative days

↓

decreased bp

↓

Evaluation

Day 1: pre drug, 2 hrs post drug

Day 3: pre drug, 2 hrs post drug

Day 5: predrug, 2 hrs post drugs & 2 hrs post drug.

642

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

Pharmacology

I M.Ph / I Sem (2022-23)

Sub : Pharmacological & Toxicological Screening Methods - I MPL10362

S.NO	Register NO	Name of the Student	Theory		Average of Two	Practical Marks	Remarks
			I mid	II mid			
1	227N1S0601	BOYANAPALLI PRASANNA	21	22	22	N	
2	227N1S0602	CHALAMALA RAMYANJALI	19	20	20	O	
3	227N1S0603	SHAIK HAFSA	0	0	0	P	
						R	
						A	
						C	
						T	
						I	
						C	
						A	
						L	

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

PRINCIPAL
VIJAYA INSTITUTE OF
PHARMACEUTICAL SCIENCES FOR WOMEN
NIKEPADU.VIJAYAWADA 521 108

Mid exam marks uploaded to JNTUK University online portal

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

FINAL PDF for M.Pharm I Semester Internal Marks

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

Date:19-05-2023

HTNO	SUBJECT	MID_1	MID_2	SEMINAR	FINAL	SUB_TYPE
227N1S1601	MPA101T	25	25	0	25	T
227N1S1602	MPA101T	24	24	0	24	T
227N1S1603	MPA101T	24	25	0	25	T
227N1S1604	MPA101T	0	0	0	0	T
227N1S1605	MPA101T	25	25	0	25	T
227N1S1606	MPA101T	25	25	0	25	T
227N1S1607	MPA101T	24	25	0	25	T
227N1S1608	MPA101T	24	24	0	24	T
227N1S1601	MPA102T	25	25	0	25	T
227N1S1602	MPA102T	21	24	0	23	T
227N1S1603	MPA102T	23	25	0	24	T
227N1S1604	MPA102T	0	0	0	0	T
227N1S1605	MPA102T	22	24	0	23	T
227N1S1606	MPA102T	24	25	0	25	T
227N1S1607	MPA102T	24	24	0	24	T
227N1S1608	MPA102T	20	21	0	21	T
227N1S1601	MPA103T	23	25	0	24	T
227N1S1602	MPA103T	22	25	0	24	T
227N1S1603	MPA103T	23	25	0	24	T
227N1S1604	MPA103T	0	0	0	0	T
227N1S1605	MPA103T	22	25	0	24	T
227N1S1606	MPA103T	24	25	0	25	T
227N1S1607	MPA103T	25	25	0	25	T
227N1S1608	MPA103T	22	25	0	24	T
227N1S1601	MPA104T	25	25	0	25	T
227N1S1602	MPA104T	24	25	0	25	T
227N1S1603	MPA104T	25	25	0	25	T
227N1S1604	MPA104T	0	0	0	0	T
227N1S1605	MPA104T	25	25	0	25	T
227N1S1606	MPA104T	25	25	0	25	T
227N1S1607	MPA104T	25	25	0	25	T
227N1S1608	MPA104T	20	22	0	21	T
227N1S1601	MPA105PA	25	25	0	25	L
227N1S1602	MPA105PA	24	24	0	24	L
227N1S1603	MPA105PA	25	25	0	25	L
227N1S1604	MPA105PA	0	0	0	0	L
227N1S1605	MPA105PA	25	25	0	25	L
227N1S1606	MPA105PA	25	25	0	25	L
227N1S1607	MPA105PA	25	25	0	25	L
227N1S1608	MPA105PA	25	25	0	25	L
227N1S1601	MPA105PB	25	25	0	25	L
227N1S1602	MPA105PB	25	24	0	25	L

HTNO	SUBJECT	MID_1	MID_2	SEMINAR	FINAL	SUB_TYPE
227N1S1603	MPA105PB	25	25	0	25	L
227N1S1604	MPA105PB	0	0	0	0	L
227N1S1605	MPA105PB	25	25	0	25	L
227N1S1606	MPA105PB	25	25	0	25	L
227N1S1607	MPA105PB	25	25	0	25	L
227N1S1608	MPA105PB	25	25	0	25	L
227N1S1601	MPA106S	0	0	98	98	S
227N1S1602	MPA106S	0	0	85	85	S
227N1S1603	MPA106S	0	0	98	98	S
227N1S1604	MPA106S	0	0	0	0	S
227N1S1605	MPA106S	0	0	97	97	S
227N1S1606	MPA106S	0	0	98	98	S
227N1S1607	MPA106S	0	0	85	85	S
227N1S1608	MPA106S	0	0	85	85	S
227N1S0301	MPH101T	25	25	0	25	T
227N1S0302	MPH101T	24	25	0	25	T
227N1S0303	MPH101T	24	24	0	24	T
227N1S0304	MPH101T	25	23	0	24	T
227N1S0305	MPH101T	24	24	0	24	T
227N1S0306	MPH101T	25	25	0	25	T
227N1S0307	MPH101T	24	25	0	25	T
227N1S0308	MPH101T	25	25	0	25	T
227N1S0309	MPH101T	24	25	0	25	T
227N1S0310	MPH101T	25	25	0	25	T
227N1S0311	MPH101T	23	22	0	23	T
227N1S0312	MPH101T	25	25	0	25	T
227N1S0313	MPH101T	0	0	0	0	T
227N1S0314	MPH101T	21	25	0	23	T
227N1S0301	MPH102T	25	24	0	25	T
227N1S0302	MPH102T	25	22	0	24	T
227N1S0303	MPH102T	24	23	0	24	T
227N1S0304	MPH102T	25	23	0	24	T
227N1S0305	MPH102T	24	24	0	24	T
227N1S0306	MPH102T	25	23	0	24	T
227N1S0307	MPH102T	21	22	0	22	T
227N1S0308	MPH102T	25	23	0	24	T
227N1S0309	MPH102T	22	23	0	23	T
227N1S0310	MPH102T	24	25	0	25	T
227N1S0311	MPH102T	18	23	0	21	T
227N1S0312	MPH102T	24	25	0	25	T
227N1S0313	MPH102T	0	0	0	0	T
227N1S0314	MPH102T	20	23	0	22	T
227N1S0301	MPH103T	24	25	0	25	T
227N1S0302	MPH103T	25	25	0	25	T
227N1S0303	MPH103T	25	25	0	25	T
227N1S0304	MPH103T	25	24	0	25	T
227N1S0305	MPH103T	25	25	0	25	T
227N1S0306	MPH103T	25	25	0	25	T
227N1S0307	MPH103T	25	25	0	25	T
227N1S0308	MPH103T	24	25	0	25	T

HTNO	SUBJECT	MID_1	MID_2	SEMINAR	FINAL	SUB_TYPE
227N1S0309	MPH103T	24	25	0	25	T
227N1S0310	MPH103T	25	25	0	25	T
227N1S0311	MPH103T	24	22	0	23	T
227N1S0312	MPH103T	25	25	0	25	T
227N1S0313	MPH103T	0	0	0	0	T
227N1S0314	MPH103T	24	25	0	25	T
227N1S0301	MPH104T	22	25	0	24	T
227N1S0302	MPH104T	22	25	0	24	T
227N1S0303	MPH104T	22	25	0	24	T
227N1S0304	MPH104T	23	25	0	24	T
227N1S0305	MPH104T	24	25	0	25	T
227N1S0306	MPH104T	23	25	0	24	T
227N1S0307	MPH104T	19	25	0	22	T
227N1S0308	MPH104T	20	25	0	23	T
227N1S0309	MPH104T	21	25	0	23	T
227N1S0310	MPH104T	20	25	0	23	T
227N1S0311	MPH104T	15	23	0	19	T
227N1S0312	MPH104T	19	25	0	22	T
227N1S0313	MPH104T	0	0	0	0	T
227N1S0314	MPH104T	20	25	0	23	T
227N1S0301	MPH105PA	22	24	0	23	L
227N1S0302	MPH105PA	24	24	0	24	L
227N1S0303	MPH105PA	23	23	0	23	L
227N1S0304	MPH105PA	24	23	0	24	L
227N1S0305	MPH105PA	25	25	0	25	L
227N1S0306	MPH105PA	23	23	0	23	L
227N1S0307	MPH105PA	22	23	0	23	L
227N1S0308	MPH105PA	23	23	0	23	L
227N1S0309	MPH105PA	22	23	0	23	L
227N1S0310	MPH105PA	22	23	0	23	L
227N1S0311	MPH105PA	22	21	0	22	L
227N1S0312	MPH105PA	23	24	0	24	L
227N1S0313	MPH105PA	0	0	0	0	L
227N1S0314	MPH105PA	22	23	0	23	L
227N1S0301	MPH105PB	21	23	0	22	L
227N1S0302	MPH105PB	24	23	0	24	L
227N1S0303	MPH105PB	21	22	0	22	L
227N1S0304	MPH105PB	22	22	0	22	L
227N1S0305	MPH105PB	24	23	0	24	L
227N1S0306	MPH105PB	23	23	0	23	L
227N1S0307	MPH105PB	22	22	0	22	L
227N1S0308	MPH105PB	23	22	0	23	L
227N1S0309	MPH105PB	22	22	0	22	L
227N1S0310	MPH105PB	22	23	0	23	L
227N1S0311	MPH105PB	21	22	0	22	L
227N1S0312	MPH105PB	22	23	0	23	L
227N1S0313	MPH105PB	0	0	0	0	L
227N1S0314	MPH105PB	22	23	0	23	L
227N1S0301	MPH106S	0	0	85	85	S
227N1S0302	MPH106S	0	0	95	95	S

HTNO	SUBJECT	MID_1	MID_2	SEMINAR	FINAL	SUB_TYPE
227N1S0303	MPH106S	0	0	80	80	S
227N1S0304	MPH106S	0	0	85	85	S
227N1S0305	MPH106S	0	0	98	98	S
227N1S0306	MPH106S	0	0	80	80	S
227N1S0307	MPH106S	0	0	85	85	S
227N1S0308	MPH106S	0	0	83	83	S
227N1S0309	MPH106S	0	0	95	95	S
227N1S0310	MPH106S	0	0	95	95	S
227N1S0311	MPH106S	0	0	80	80	S
227N1S0312	MPH106S	0	0	85	85	S
227N1S0313	MPH106S	0	0	0	0	S
227N1S0314	MPH106S	0	0	85	85	S
227N1S0601	MPL101T	25	25	0	25	T
227N1S0602	MPL101T	22	25	0	24	T
227N1S0603	MPL101T	0	0	0	0	T
227N1S0601	MPL102T	24	24	0	24	T
227N1S0602	MPL102T	22	24	0	23	T
227N1S0603	MPL102T	0	0	0	0	T
227N1S0601	MPL103T	21	22	0	22	T
227N1S0602	MPL103T	19	20	0	20	T
227N1S0603	MPL103T	0	0	0	0	T
227N1S0601	MPL104T	25	25	0	25	T
227N1S0602	MPL104T	23	24	0	24	T
227N1S0603	MPL104T	0	0	0	0	T
227N1S0601	MPL105PA	24	24	0	24	L
227N1S0602	MPL105PA	24	24	0	24	L
227N1S0603	MPL105PA	0	0	0	0	L
227N1S0601	MPL105PB	25	24	0	25	L
227N1S0602	MPL105PB	25	24	0	25	L
227N1S0603	MPL105PB	0	0	0	0	L
227N1S0601	MPL106S	0	0	98	98	S
227N1S0602	MPL106S	0	0	97	97	S
227N1S0603	MPL106S	0	0	0	0	S
227N1S1701	MRA101T	21	25	0	23	T
227N1S1702	MRA101T	22	25	0	24	T
227N1S1703	MRA101T	24	25	0	25	T
227N1S1704	MRA101T	24	25	0	25	T
227N1S1705	MRA101T	23	25	0	24	T
227N1S1706	MRA101T	25	25	0	25	T
227N1S1701	MRA102T	25	25	0	25	T
227N1S1702	MRA102T	25	25	0	25	T
227N1S1703	MRA102T	25	25	0	25	T
227N1S1704	MRA102T	25	25	0	25	T
227N1S1705	MRA102T	25	25	0	25	T
227N1S1706	MRA102T	25	25	0	25	T
227N1S1701	MRA103T	21	22	0	22	T
227N1S1702	MRA103T	19	22	0	21	T
227N1S1703	MRA103T	22	21	0	22	T
227N1S1704	MRA103T	24	23	0	24	T
227N1S1705	MRA103T	24	24	0	24	T

HTNO	SUBJECT	MID_1	MID_2	SEMINAR	FINAL	SUB_TYPE
227N1S1706	MRA103T	23	24	0	24	T
227N1S1701	MRA104T	22	23	0	23	T
227N1S1702	MRA104T	23	22	0	23	T
227N1S1703	MRA104T	21	22	0	22	T
227N1S1704	MRA104T	25	25	0	25	T
227N1S1705	MRA104T	25	25	0	25	T
227N1S1706	MRA104T	25	25	0	25	T
227N1S1701	MRA105PA	21	21	0	21	L
227N1S1702	MRA105PA	22	21	0	22	L
227N1S1703	MRA105PA	22	21	0	22	L
227N1S1704	MRA105PA	24	24	0	24	L
227N1S1705	MRA105PA	24	24	0	24	L
227N1S1706	MRA105PA	23	24	0	24	L
227N1S1701	MRA105PB	24	24	0	24	L
227N1S1702	MRA105PB	24	24	0	24	L
227N1S1703	MRA105PB	25	24	0	25	L
227N1S1704	MRA105PB	24	24	0	24	L
227N1S1705	MRA105PB	24	24	0	24	L
227N1S1706	MRA105PB	25	24	0	25	L
227N1S1701	MRA106S	0	0	85	85	S
227N1S1702	MRA106S	0	0	80	80	S
227N1S1703	MRA106S	0	0	80	80	S
227N1S1704	MRA106S	0	0	98	98	S
227N1S1705	MRA106S	0	0	98	98	S
227N1S1706	MRA106S	0	0	95	95	S

Verified by: PRINCIPAL ***Controller of Examinations***

Date:19-05-2023