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12/1, CHIKKA BELLANDUR, CARMELARAM POST, VARTHUR HOBLI, BANGALORE - 560 035



5.1.3 Capacity building and skills enhancement initiatives taken by the institution

ICT/computing skills

SI No	Name of the Document	Link the Document
1	JMP SOFTWARE	Click here
2	R STUDIO SOFTWARE-BIOSTATISTICS	Click here
3	AUTO DOCK, ARGUS LAB - DOCKING STUDIES	Click here
4	MOE SOFTWARE FOR QSAR	Click here
5	TOXTREE- ADMET	Click here
6	EXPHARMA SERIES SOFTWARE	Click here

For the Year

2020-2021

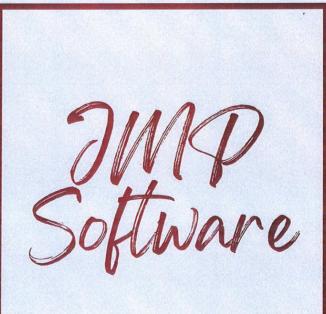
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DATE: 30.10.2020

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This is to inform all the B Pharm, M Pharm, Pharm D students that, the college is organizing the **JMP Software Programm- Formulation Development** training program on 2.11.2020. All the interested students can attend the program.

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KRUPANIDHI COLLEGE OF PHARMACY, BANGALORE

M Pharm, Dept. of Quality Assurance, 2020-21

JMP (statistical software)

- ❖ JMP (pronounced "jump") is a suite of computer program for statistical analysis developed by the JMP business unit of SAS Institute.
- * At Krupanidhi College of Pharmacy, we extensively use *JMP*[®] 13.2.1 software (Academic license from SAS, SAS Institute, Cary, NC, USA). for performing statistical analysis of data generated through students' academic projects.

Beneficiaries of the Software:

I and II M Pharm students (Dept. of Quality Assurance) undertaking academic projects are the primary beneficiaries of the tool. The software is also used to provide hands on training for IV B Pharm students on application of software in product development.

Syllabus/Content of the Program (M Pharm- I and II SEM, QA Dept.)

Practical's-8 hrs/week

- 1. Case study Total Quality Management
- 2. Case study Six Sigma
- 3. Case study Deviations,
- 4. Case study Out of Specifications (OOS)
- 5. Case study Out of Trend (OOT)
- 6. Case study Corrective & Preventive Actions (CAPA)
- 7. Case study Deviations
- 8. Case study -Development of Stability study protocol
- 9. Case study- Estimation of process capability

10. Case study -Application of QbD

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Students List with Project undertaken by the utilization of JMP software:

SI.	STUDENT NAME	PROJECT TITLE	GUIDE NAME
NO			







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1	ANITA RANI SAHOO	DEVELOPMENT AND	CHANDRAMOULI R
1	(19PQ022)	CHARECERIZATION OF ORALLY	
	(191 &022)	DISINTEGRATING TABLETS OF	
		BCS CLASS III VSAODILATOR	
		DRUG IN A QbD FRAMEWORK	
2	JAMES SOUNDER DEVDAS	DEVELOPMENT AND	CHANDRAMOULI R
	(19PQ023)	CHARECTERIZATION OF A	
		NOVEL BCS CLASS I	
		ANTIEMETIC DRUG LOADED	
		ORAL DISSOLUTION FILM IN A	
		QbD FRAMEWORK	
3	MANJUNATH KALLEDA	QbD BASED DEVELOPMENT OF	KAVITHA A N
	(19PQ024)	FAST DISSOLVING BUCCAL	
	W	FILM OF CETRIZINE	
4	MANOHAR S K (19PQ025)	DEVELOPMENT OF RISK	CHANDRAMOULI R
		ASSESSMENT BASED PROCESS	
		DESIGN FOR A NOVEL DRUG	
		LOADED ORAL DISSOLUTION	
		FILMS IN ITS DEVELOPMENT	
		STAGE AND ITS CONTROL	
		STRATEGY	
5	MOHAN KUMAR D S	QbD BASED DEVELOPMENT OF	KAVITHA A N
	(19PQ026)	TRANSDERMAL PATCHES OF	
		MELOXICAM	
6	NAMRATHA N (19PQ027)	SIMULTANEOUS ESTIMATION	KAVITHA A N
		OF SOFOSBUVIR, VELPATASVIR	
		AND VOXILAPREVIR	
		COMBINATION IN BULK AND	
		MARKETED FORMULATIONS BY	
		HIGH PERFORMANCE LIQUID	
		CHROMATOGRAPHY IN A	
	DARING BULLETA	QUALITY BY DESIGN APPROACH	CHANDRAMOULLE
7	PARIMI BHARATI	DEVELOPMENT AND	CHANDRAMOULI R
	(19PQ028)	CHARECTERIZATION OF NOVEL	
		BCS III ANTIMIGRAINE ORAL	
		DISINTEGRATION TABLETS IN A	
0	DD A DUNI GOMANA DD A DEED	QbD FRAMEWORK	IZANJITI I A A NI
8	PRABHU SONAM PRADEEP	QUALITY BY DESIGN BASED	KAVITHA A N
	(19PQ029)	NEW STABILITY INDICATING	
		HIGH PERFORMANCE LIQUID	
		CHROMATOGRAPHY METHOD	α
		FOR SIMULTANEOUS	2
		ESTIMATION OF EMPAGLIFOCIN, LINAGLIPTIN AND METFORMIN	
		IN BULK AND MARKETED	Maria Caraca Car
			PRINCIPAL
		TORMULATIONS	nidhi College of Pharm



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9	PRAGATHI V (19PQ030)	QbD BASED DEVELOPMENT OF	KAVITHA A N
		NOVEL SELF EMULSIFYING	15
	27	DRUG DELIVERY SYSTEM OF	
		ROSUVASTATIN	
10	VARSHINI S (19PQ031)	QbD BASED DEVELOPMENT AND	CHANDRAMOULI R
		VALIDATION FOR THE	
		ESTIMATION OF BICTEGRAVIR,	
		EMITRICITABIN AND	1
		TENOFOVIR, COMBINATIONS IN	
		BULK AND MARKETED	
		FORMULATIONS	

First SEM Students List

Student
Pavan B
Prajwala S
Punith Kumar V
Tangku Lepcha
Prasanth Kumar C
Ramya shree PR
Swapna G
Anusree S Kumar

Activities performed using JMP:

- Pharmaceutical formulation development:
 - ✓ Representing the risk involved in the product development- Inshikawa diagram.
 - ✓ Statistical Design of experiment.
 - ✓ DoE Evaluation/Model Fit.
 - ✓ Validation of the selected design.
 - ✓ Optimized formulation development.

Software Utilization in Krupanidhi College of Pharmacy:

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Since 2016, JMP has been used extensively in Krupanidhi College of Pharmacy for M PHARM student project purpose:

1. Total projects involving JMP

: 10

2. Total students utilized JMP for academic practical's: 08

3. Total papers published using JMP as statistical tool: 04

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R Studio software

Biostatistics 2/11/2020

Aprincipal Krupanishi College of Pharmacy Chikkabellandur, Carmelaram Post Varthur Market



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This is to inform all the B Pharm, M Pharm, Pharm D students that, the college is organizing the **R Studio software-Biostatistics** training program on 2.11.2020 . All the interested students can attend the program.

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R Studio & EZR- 2020-21

- R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and MacOS.
- EZR is a graphical user interface for R based on R commander.
- At Krupanidhi College of Pharmacy, we extensively use EZR and R foundation package for performing statistical analysis of data generated through students' academic projects.

Beneficiaries of the Software:

V & VI PharmD students undertaking academic projects are the primary beneficiaries of the tool. The software is also used to provide hands on training for IV PharmD students on Biostatistics.

Activities performed using EZR Interface for R:

- Sample size estimation for pharmacoepidemiologic and clinical interventional studies involving human participants as follows:
 - ✓ Sample size estimation from control and desired response rates.
 - ✓ Sample size estimation from proportion and confidence interval.
 - ✓ Sample size estimation for comparison with specified proportion.
 - ✓ Power calculation for comparison with specified proportion.
 - Sample size estimation for non-inferiority trial of two proportions.
 - Sample size estimation from standard deviation and confidence interval.
 - Sample size and power calculation for comparison between two means.
 - Sample size and power calculation for comparison and non-inferiority trial of two survival curves and two paired means.
- Perform the following descriptive summary and inferential statistics involving discrete and continuous variables.
 - ✓ Frequency distributions
 - ✓ Assess data normality using Q-Q plot and Shapiro-Wilk test.
 - ✓ Compute measures of central tendency and dispersion.
 - ✓ Construct relevant graphs and charts for given statistical tests.

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- ✓ Perform parametric (Unpaired t-test, paired t-test and ANOVA) and nonparametric tests (Mann-Whitney U, Wilcoxon Rank Sum and Kruskal Wallis test) for comparison.
- ✓ Perform Pearson's Product Moment Correlation and Spearman's Ranked Correlation of continuous variables.
- ✓ Perform Chi-square and Fisher's Exact test to associate dichotomous variables.
- ✓ Perform post-hoc analysis of variables involving ordinary and repeated measures: Bonferroni corrections.

Software Utilization in Krupanidhi College of Pharmacy:

Since 2018, EZR has been used extensively in Krupanidhi College of Pharmacy for V year PharmD project statistical analysis purpose:

1. Total students utilized EZR for academic projects : 30

2. Total students trained in EZR for statistical analysis: 30 (Beginner level proficiency)

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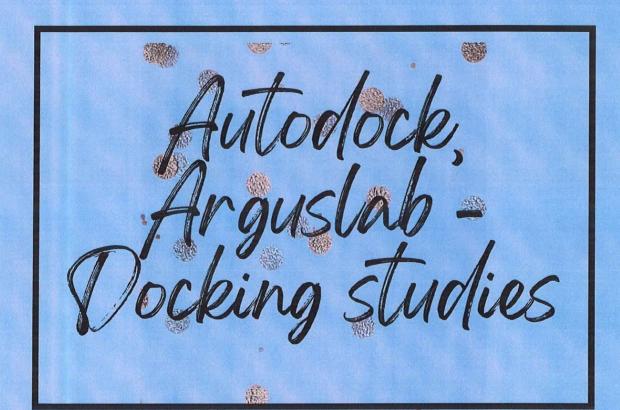
LIST OF STUDENTS

SL NO	PROGRAM NAME	NAME OF THE STUDENT
1	V Pharm D	Ms. AbhiramiEby
2	V Pharm D	Ms. Amrutha Mohan
3	V Pharm D	Ms.Arathi,M
4	V Pharm D	Mr. Archit Jain
5	V Pharm D	Ms. BesteenRinjuRajen
6	V Pharm D	Ms.B. DefriaZeneth
7	V Pharm D	Ms. EleenaBijo
8	V Pharm D	Ms. Elizabeth Jacob
9	V Pharm D	Ms. Elsa Jacob
10	V Pharm D	Mr. Lanish Wilson
11	V Pharm D	Mr. Mahammad Asir. M
12	V Pharm D	MamillapallyLoukya
13	V Pharm D	Ms. Merlin Mary Sabu
14	V Pharm D	Mr. Pavan.M
15	V Pharm D	Mr. Pavan . N
. 16	V Pharm D	Ms. PharidaThubru
17	V Pharm D	Mr. Rajeshkumar Dutta
18	V Pharm D	Ms. Shiji John
19	V Pharm D	Ms. Shyno Abraham
20	V Pharm D	Mr. Sidharth
21	V Pharm D	Ms. Subhiksha. V
22	V Pharm D	Ms.TheerdhaDhar
23	V Pharm D	Ms. Thendral. R
24	V Pharm D	Ms. Triveni . L
25	V Pharm D	Sarah Philip Panicker
26	V Pharm D	Y Bee Be Fathima

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This is to inform all the B Pharm, M Pharm, Pharm D students that, the college is organizing the **Autodock Software** training program on 2.11.2020. All the interested students can attend the program.

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AUTODOCK-2020-21

- Autodock is free software used for docking small molecules into a known protein structure, is a powerful tool for drug design and has become an integral part of the drug discovery process.
- Two generations of software are available namely AutoDock4 and AutoDockvina.
 AutoDock-GPU was developed, an accelerated version of AutoDock4 that is hundreds of times faster than the original single-CPU docking code.
- The current version of AutoDock, using the Lamarckian Genetic Algorithm and empirical free energy scoring function.
- At Krupanidhi College of Pharmacy, we extensively use AutoDock4 and AutoDockvina for performing docking studies for students' academic projects.

Beneficiaries of the Software:

V & VI Pharm D students undertaking academic projects are the primary beneficiaries of the tool. The software is also used to provide hands on training for M Pharm Pharmacology and Ph Chemistry students on Drug design.

Activities performed using Autodock:

- Auto Dock offer the advantage of delivering new drug candidates more quickly and at a lower cost.
- The use of complementary experimental and informatics techniques increases the chance of success in many stages of the discovery process.
- It is designed to predict how small molecules, such as substrates or drug candidates, bind to a receptor of a known 3D structure.
- AutoGrid generates an electrostatic potential grid map and a desolvation map. The
 full set of grid maps and the flexible part of the receptor are used by AutoDock to
 guide the docking process of the selected ligands.
- PDB and PDBQT file formats are mostly used for input and output files.

AutoDock's main strengths are

(i) receptor flexibility;

(ii) blind-docking;

(iii) precalculated grid maps on a binding site;

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- (iv) free-energy scoring function based on linear regression analysis, the AMBER force field, and a large set of protein-ligand complexes with known inhibition constants; and
- (v) good correlation between predicted inhibition constants and experimental data.
- Perform the following descriptive summary:
 - ✓ X-ray crystallography;
 - ✓ Structure-based drug design;
 - ✓ Lead optimization;
 - ✓ Virtual screening (HTS);
 - ✓ Combinatorial library design;
 - ✓ Protein-protein docking;
 - ✓ Chemical mechanism studies

Software Utilization in Krupanidhi College of Pharmacy:

Since 2019, Autodock has been used extensively in Krupanidhi College of Pharmacy for V Pharm D, M Pharm Ph Chemistry and Pharmacology for project in drug design:

1. Total projects involving Autodock

: 10

2. Total students utilized Autodock for academic projects

: 10

3. Total papers published using Autodock

: Communicated

4. Total students trained in Autodock : 40 (Beginner level proficiency)

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Chikkabellandur, Bangalore - 560 035
Varthur Hobli, Bangalore



LIST OF STUDENTS

AUTODOCK FOR ACADEMIC		
1	AKASH ASHOK MANVI	V PHARM D
2	MUNAZZA AFREEN	
3	ELMER CLOVER RODRIGUEZ	
4	KISHOR GS	
5	SYED SADATHULLA	
6	MAHESH CHOUGLE	M PHARM
7	DECHAN	
8	SHARAN GUMBE	
9	NAMITHA	
10	HEMANTH PANTH	

	AUTODOCK FOR ACADEMIC FOR BEGINNERS			
1.	AMAN PANDIT	B PHARM		
2.	DEEPIKA	B PHARM		
3.	KEERTHANA	B PHARM		
4.	KOMALA	B PHARM		
5.	LAKSHMI	B PHARM		
6.	LIKITHA	B PHARM		
7.	NAVYA	B PHARM		
8.	NAVYA S	B PHARM		
9.	NIKHILESH	B PHARM		
10.	NISHMITHA	B PHARM		
11.	PAVITHRA	B PHARM		
12.	RANJITHA M PRINCIPAL	B PHARM		
13.	ANJELIN Chikkabellandur, Carmelaram Varthur Hobli, Bangalore - 560	B PHARM		
14.	ANISHA	B PHARM		



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15.	JAGADEVI	B PHARM
16.	MUSKAN	B PHARM
17.	NIKHIL E	B PHARM
18.	OLIVIA	B PHARM
19.	OVIYA	B PHARM
20.	PREETHI K	B PHARM
21.	RASHMI	B PHARM
22.	SHIVANGI	B PHARM
23.	SHARVANI	B PHARM
24.	SNIGDHA	B PHARM
25.	SUCHITRA	B PHARM
26.	VENU	B PHARM
27.	AHMED	B PHARM
28.	JOHNSI S	B PHARM
29.	K MONICA	B PHARM
30.	KAVYA S M	B PHARM
31.	KAVYASREE R	B PHARM
32.	KISHORE C	B PHARM
33.	KOGILESHWARI S	B PHARM
34.	MIR RAZA ABBAS	B PHARM
35.	MONISHA S	B PHARM
36.	MUKESH KUMAR RAUNIYA	B PHARM
37.	MUKESH THAKUR	B PHARM
38.	SOMASHEKAR R	B PHARM
39.	SUCHITHRA G	B PHARM
40.	SURAVI DUTTA SPINCIPAL	B PHARM
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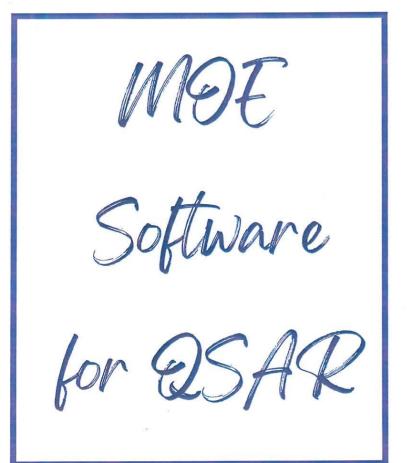
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DATE: 30.10.2020

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This is to inform all the B Pharm, M Pharm, Pharm D students that, the college is organizing the **Molecular Operating**Environment (MOE) software training program on 2.11.2020.

All the interested students can attend the program.

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Molecular Operating Environment (MOE)- 2020-21

- Molecular Operating Environment (MOE) developed by Chemical Computing Group
 Inc Is a drug discovery software platform that integrates visualization andmodelling
 as well as methodology development.
- MOE strongly supports drug design through molecular simulation, protein structure analysis, data processing of small molecules, docking study of proteins and small molecules.
- At Krupanidhi College of Pharmacy, we extensively use MOE foundation package for visualization and modelling through students' academic projects.

Beneficiaries of the Software:

V & VI Pharm D students undertaking academic projects are the primary beneficiaries of the tool. The software is also used to provide hands on training for M Pharm Pharmacology and Ph Chemistry students on Drug design.

Activities performed using MOE:

- Including the pharmacophore-based combinatorial library design, potential energy evaluations, docking, crystallographic system, and electron density map visualization.
- MOE also includes a set of tools for protein modeling, including homology searching, secondary structure prediction, sequence and structure alignment, and tools for building homology models.
- It includes structure-based design, fragment-based design, pharmacophore discovery, medicinal chemistry applications, biologics applications, protein and antibodymodeling, molecular modeling and simulations, cheminformatics&QSAR.

 The system integrates visualization, molecular modeling, protein modeling, cheminformatics, and bioinformatics all in one program.

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- MOE's CASP validated applications for protein structure prediction are powerful and easy to use, both for experts and occasional users.
- Powerful homolog search, alignment algorithm, and refinement methodology make high-quality sequence-to-structure predictions possible.
- Provides a comprehensive set of Structure-Based design tools, including an active site finder, a MultiFragment Search (MFS) to help understand the interactions between chemical functional groups.
- MOE's pharmacophore modeling is a powerful means to generate and use 3D geometric information to search for novel active compounds.

Software Utilization in Krupanidhi College of Pharmacy:

Since 2019, MOE has been used in Krupanidhi College of Pharmacy for V Pharm D, M Pharm Ph Chemistry and Pharmacology for project in drug design:

1. Total projects involving MOE

: 10

2. Total students utilized MOE for academic projects : 10

3. Total papers published using MOE : Communicated

4. Total students trained in MOE

: 40 (Beginner level proficiency)

LIST OF STUDENTS

	MOE FOR ACADEMIC		
1	AKASH ASHOK MANVI	V PHARM D	
2	MUNAZZA AFREEN		
3	ELMER CLOVER RODRIGUEZ		
4	KISHOR GS		
5	SYED SADATHULLA		
6	MAHESH CHOUGLE	M PHARM	
7	DECHAN		
8	SHARAN GUMBE		TPALMATE
9	NAMITHA	PIN	cre of paran
10	HEMANTH PANTH	Thi Co	legarmele.
		PRIN Krupanidni Co	Bangalore

Varthur Hobil MOE FOR ACADEMIC FOR BEGINNERS AMAN PANDIT **B PHARM** 1.



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2.	DEEPIKA	B PHARM
3.	KEERTHANA	B PHARM
4.	KOMALA	B PHARM
5.	LAKSHMI	B PHARM
6.	LIKITHA	B PHARM
7.	NAVYA	B PHARM
8.	NAVYA S	B PHARM
9.	NIKHILESH	B PHARM
10.	NISHMITHA	B PHARM
11.	PAVITHRA	B PHARM
12.	RANJITHA M	B PHARM
13.	ANJELIN	B PHARM
14.	ANISHA	B PHARM
15.	JAGADEVI	B PHARM
16.	MUSKAN	B PHARM
17.	NIKHIL E	B PHARM
18.	OLIVIA	B PHARM
19.	OVIYA	B PHARM
20.	PREETHI K	B PHARM
21.	RASHMI	B PHARM
22.	SHIVANGI	B PHARM
23.	SHARVANI	B PHARM C CONTROL OF C
24.	SNIGDHA College	B PHARM PROBLEM
25.	SUCHITRA	B PHARM KILIPAN HOBIL
		CALL III

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26.	VENU	B PHARM
27.	AHMED	B PHARM
28.	JOHNSI S	B PHARM
29.	K MONICA	B PHARM
30.	KAVYA S M	B PHARM
31.	KAVYASREE R	B PHARM
32.	KISHORE C	B PHARM
33.	KOGILESHWARI S	B PHARM
34.	MIR RAZA ABBAS	B PHARM
35.	MONISHA S	B PHARM
36.	MUKESH KUMAR RAUNIYA	B PHARM
37.	MUKESH THAKUR	B PHARM
38.	SOMASHEKAR R	B PHARM
39.	SUCHITHRA G	B PHARM
40.	SURAVI DUTTA	B PHARM

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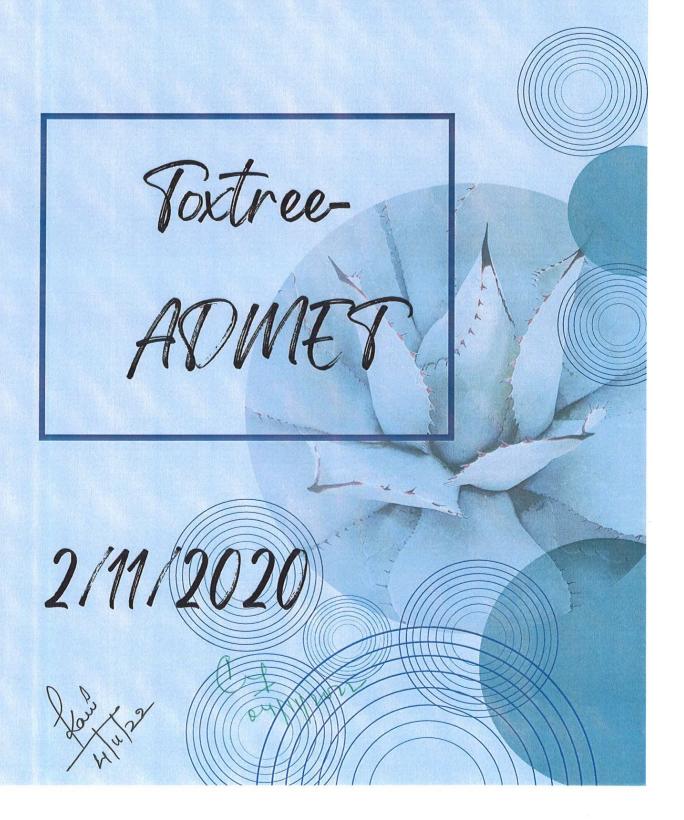


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This is to inform all the B Pharm, M Pharm, Pharm D students that, the college is organizing the **ToxTree Software** training program on 2.11.2020. All the interested students can attend the program.

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TOXTREE-2020-21

- ToxTree is an free software used in silico non-testing method for assessing the risks and hazards associated with a compound.
- ToxTree also predicts the potential for skin irritation and eye irritation, biodegradation, skin sensitization, other mutagenicity/carcinogenicity, and characteristics such as protein or DNA binding alerts.
- At Krupanidhi College of Pharmacy, we extensively use TOXTREE for performing toxicity studies for students' academic projects.

Beneficiaries of the Software:

V & VI Pharm D students undertaking academic projects are the primary beneficiaries of the tool. The software is also used to provide hands on training for M Pharm Pharmacology and Ph Chemistry students on Drug design.

Activities performed using Toxtree:

- It includes decision trees for predicting Cramer rules, Cramer rules with extensions, Verhaar scheme, START biodegradability, eye irritation and corrosion, structure alerts for the in vivo micronucleus assay in rodents, Michael acceptors, Benigni/Bossarulebase (for mutagenicity and carcinogenicity), skin irritation/skin corrosion, cytochrome.
- Provides a flexible and documented (in the doc/src application subfolder) plug-in interface, allowing the integration of different classification schemes developed at a future date.
- Predictions with Toxtree SMILES codes or a 2D structure diagram is used. The software can also be used to perform batch processing of large numbers of compounds by importing datasets of various file types.

New decision trees with arbitrary rules can be built with the help of a graphical user Krupanidhi College of Pl

Since 2019, ToxTreehas been used extensively in Krupanidhi College of Pharmacy for V

PharmD, M Pharm Ph Chemistry and Pharmacology for project in decomposition of Pharmacology for V



1. Total projects involving ToxTree

: 10

2. Total students utilized ToxTree for academic projects

: 10

3. Total papers published using ToxTree

: Communicated

4. Total students trained in ToxTree

: 40 (Beginner level proficiency)

LIST OF STUDENTS

	TOXTREE FOR ACADEM	IIC
1	AKASH ASHOK MANVI	V PHARM D
2	MUNAZZA AFREEN	
3	ELMER CLOVER RODRIGUEZ	
4	KISHOR GS	
5	SYED SADATHULLA	
6	MAHESH CHOUGLE	M PHARM
7	DECHAN	
8	SHARAN GUMBE	
9	NAMITHA	
10	HEMANTH PANTH	

	TOXTREE FOR ACADEMIC F	OR BEGINNERS
1.	AMAN PANDIT	B PHARM
2.	DEEPIKA	B PHARM
3.	KEERTHANA	B PHARM
4.	KOMALA	B PHARM
5.	LAKSHMI	B PHARM
6.	LIKITHA	B PHARM
7.	NAVYA A CONTRACTOR	B PHARM
8.	NAVYA S	B PHARM
9.	NIKHILESH PROGRAMMENT	B PHARM
10.	NAVYA S NIKHILESH NISHMITHA NISHMITHA	B PHARM



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11	DATHELIDA		D DIIA DAA
11.	PAVITHRA		B PHARM
12.	RANJITHA M		B PHARM
13.	ANJELIN		B PHARM
14.	ANISHA		B PHARM
15.	JAGADEVI		B PHARM
16.	MUSKAN		B PHARM
17.	NIKHIL E		B PHARM
18.	OLIVIA		B PHARM
19.	OVIYA		B PHARM
20.	PREETHI K		B PHARM
21.	RASHMI		B PHARM
22.	SHIVANGI		B PHARM
23.	SHARVANI		B PHARM
24.	SNIGDHA		B PHARM
25.	SUCHITRA		B PHARM
26.	VENU		B PHARM
27.	AHMED		B PHARM
28.	JOHNSI S		B PHARM
29.	K MONICA		B PHARM
30.	KAVYA S M	The state of	B PHARM
31.	KAVYASREE R	A Sugar Se	B PHARM
32.	KISHORE C	A SO OF THE PERSON NAMED IN COLUMN TO PERSON	B PHARM
33.	KOGILESHWARI S	St. Cat. War.	B PHARM
34.	MIR RAZA ABBAS	Lagrad Hope	B PHARM
35.	MONISHA S	A State of the sta	B PHARM



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36.	MUKESH KUMAR RAUNIYA	B PHARM
37.	MUKESH THAKUR	B PHARM
38.	SOMASHEKAR R	B PHARM
39.	SUCHITHRA G	B PHARM
40.	SURAVI DUTTA	B PHARM

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RECOGNISED BY GOVT OF KARNATAKA |

APPROVED BY PHARMACY COUNCIL OF INDIA |

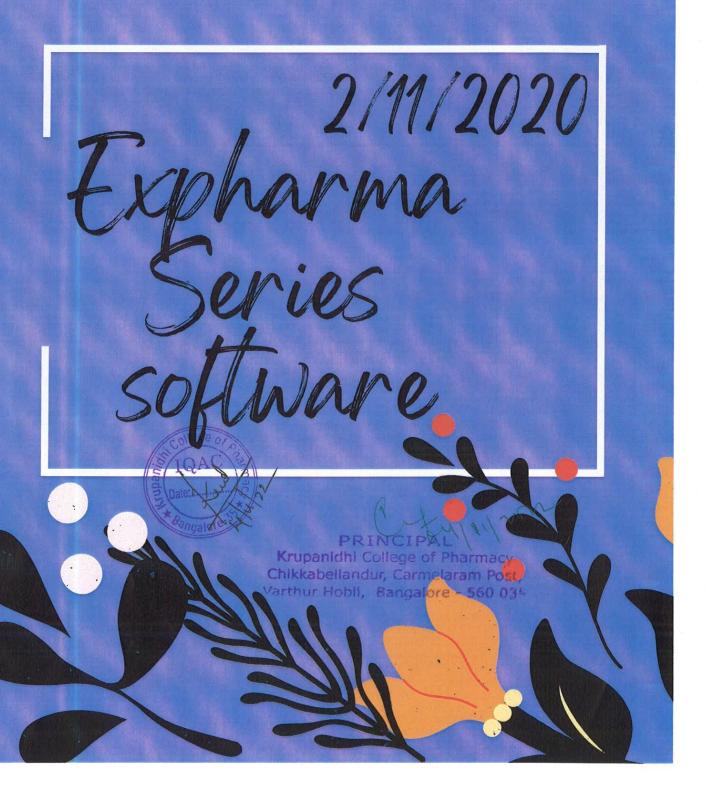
AICTE,NEW DELHI AND AFFILIATED TO RAJIV GANDHI UNIVERSITY OF HEALTH SCIENCES

| AN ISO 9001:2015 CERTIFIED INSTITUTION

NAAC 'A' GRADE ACCREDITED

#12/1,CHIKKABELANDHUR, CARMELARAM POST, BANGALORE-560 035





DATE: 30.10.2020

CIRCULAR

This is to inform all the B Pharm, M Pharm, Pharm D students that, the college is organizing the **Expharma Series software** training program on 2.11.2020. All the interested students can attend the program.

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SUMMARY ON EXPHARMA SERIES 2020-2021

(EXPERIMENTAL PHARMACOLOGY SERIES)

- This is a computer assisted learning package containing various programs which simulate animal experiments in Pharmacology.
- These programs can be used to demonstrate drug on different animal's systems.
- The package is user friendly, highly interactive and full of animated sequences which make simulation appear realistic.

BENEFICIARIES OF THE SOFTWARE:

- Software is aimed for medical, pharmacy and dental undergraduate students. The software can also be used by the students of paramedical courses such as nursing, medical laboratory technology and physiotherapy etc.
- * IV, V, VI Sem B. Pharm and III PharmD students undergoes the regular practicals by using this software.

ACTIVITIES PERFORMED USING EXPHARMA SOFTWARE:

- 1. Experiment on effects of various drugs (Mydriatic, Miotic and Local Anaesthetic) on rabbit's eye.
- 2. (Epinephrine, Atropine, Ephedrine, Physostigmine, Lignocaine)
- 3. Study of Analgesic activity with the help of "Tail Flick Apparatus" (Analgesiometer).
- 4. Study of Antihistaminic drugs/Anti allergic drugs by mast cell stabilization method with the help of "Histamine Chamber"
- 5. Study of Muscle Relaxant activity with the help of "Rota-Rod Apparatus".
- 6. Study of CNS Depressants & Stimulants Using "Actophotometer".
- 7. Study of Analgesic activity with the help of "Hot Plate Apparatus" (Analgesiometer).
- 8. Effect of Different Drugs (Including Saline Purgatives) on Ciliary Motility of Frog Oesophagus.
- 9. Study of Drugs acting on CNS (Including Anxiolytic Activity) using following modules
 - Elevated Plus Maze Method
 - Pole Climbing Method
- 10. Study of anticonvulsant activity using "Electro Convulsiometer".
- 11. Experiment on Effect of various drugs on Isolated Frog's Heart. (DRC- Dose Response Curve)
 - Epinephrine
 - Norepinephrine
 - Isoprenaline
 - Calcium Chloride
 - Propranolol
 - Acetylcholine
 - Potassium chloride
 - Atropine sulphate

12. Experiment on Bioassay of Histamine on the Ileum of Guinea Pig.

13. Simulation of pupil control

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- Simulation of the effects of the physiological stimuli and drugs on the papillary reflexes.
- Simulation of the control in patient with partial parasymathectomy.
- 14. Experiments on Lagendorff's Apparatus
 - Effect of coronary vasodilators on isolated heart
 - Effect of parasympathomimetic.
- 15. Test for pyrogens using rabbits.
- 16. Effect of drugs on isolated guinea pig ileum (in-vitro).
- 17. To Study Respiratory depression effect on rabbit.
- 18. Determination of acute irritation of a test substance.
 - Skin irritation (Including edema formation)
 - Eye irritation
- 19. Experiments on colonic motility in rat in vitro.
- 20. Experiments on thyroid and antithyroid drugs
 - The effect of thyroxin, TSH, propylthiouracil, on metabolism.
- 21. Experiments on blood sugar
- The effect of insulin (hypoglycaemic activity) and alloxan on blood glucose.
- 23. Bioassay of Acetylcholine on the isolated rectus abdominis muscle of frog
 - By Matching Method
 - By Interpolation Method
 - By 3 Point Method
 - By 4 Point Method

EXPHARMA SERIES UTILIZATION IN KRUPANIDHI COLLEGE OF PHARMACY

- Since 2018, Expharma series has been extensively used in Krupanidhi College of Pharmacy for IV, V, VI Sem B. Pharm and III Pharm D students for learning Simulated experiments in pharmacology.
- Total Number of experiments involving Expharma series :23
- Total Number of students used Expharma series:
 - 1. IV Sem B. Pharm 110 students
 - 2. V Sem B. Pharm- 110 students
 - 3. VI Sem B. Pharm- 104 students
 - 4. III Pharm D 30 students.
 - 5. Total- 354 students.

Syllabus/content of the programme:

B. PHARM IV SEM:

BP 408 P. PHARMACOLOGY-I (Practical) 4Hrs/Week

- 1. Introduction to experimental pharmacology.
- 2. Commonly used instruments in experimental pharmacology.
- 3. Study of common laboratory animals.
- 4. Maintenance of laboratory animals as per CPCSEA guidelines.

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- 5. Common laboratory techniques. Blood withdrawal, serum and plasma separation, anesthetics and euthanasia used for animal studies.
- 6. Study of different routes of drugs administration in mice/rats.
- 7. Study of effect of hepatic microsomal enzyme inducers on the phenobarbitone sleeping time in mice.
- 8. Effect of drugs on ciliary motility of frog oesophagus
- 9. Effect of drugs on rabbit eye.
- 10. Effects of skeletal muscle relaxants using rota-rod apparatus.
- 11. Effect of drugs on locomotor activity using Actophotometer.
- 12. Anticonvulsant effect of drugs by MES and PTZ method.
- 13. Study of stereotype and anti-catatonic activity of drugs on rats/mice.
- 14. Study of anxiolytic activity of drugs usingrats/mice.
- 15. Study of local aesthetics by different methods

Note: All laboratory techniques and animal experiments are demonstrated by simulated experiments by softwares and videos

B. PHARM V SEM:

BP 507 P. PHARMACOLOGY-II (Practical) 4Hrs/Week

- 1. Introduction to in-vitro pharmacology and physiological salt solutions.
- 2. Effect of drugs on isolated frog heart.
- 3. Effect of drugs on blood pressure and heart rate of dog.
- 4. Study of diuretic activity of drugs using rats/mice.
- 5. DRC of acetylcholine using frog rectus abdominis muscle.
- 6. Effect of physostigmine and atropine on DRC of acetylcholine using frog rectus abdominis muscle and rat ileum respectively.
- 7. Bioassay of histamine using guinea pig ileum by matching method.
- 8. Bioassay of oxytocin using rat uterine horn by interpolation method.

- 10. Bioassay of acetylcholine using rat ileum/colon by four-point bioassay. Varthur Hobil.

 11. Determination of PA2 value of prozesia. 11. Determination of PA2 value of prazosin using rat anococcygeus muscle (by Schilds plot method).
- 12. Determination of PD2 value using guinea pig ileum.
- 13. Effect of spasmogens and spasmolytics using rabbit jejunum.

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- 14. Anti-inflammatory activity of drugs using carrageenan induced paw-edema model.
- 15. Analgesic activity of drug using central and peripheral methods

Note: All laboratory techniques and animal experiments are demonstrated by simulated experiments by softwares and videos

B. PHARM VI SEM:

BP 608 P. PHARMACOLOGY-III (Practical) 4Hrs/Week

- 1. Dose calculation in pharmacological experiments
- 2. Antiallergic activity by mast cell stabilization assay
- 3. Study of anti-ulcer activity of a drug using pylorus ligand (SHAY) rat model and NSAIDS induced ulcer model.
- 4. Study of effect of drugs on gastrointestinal motility
- 5. Effect of agonist and antagonists on guinea pig ileum
- 6. Estimation of serum biochemical parameters by using semi- autoanalyzer
- 7. Effect of saline purgative on frog intestine
- 8. Insulin hypoglycaemic effect in rabbit
- 9. Test for pyrogens (rabbit method)
- 10. Determination of acute oral toxicity (LD50) of a drug from a given data
- 11. Determination of acute skin irritation / corrosion of a test substance
- 12. Determination of acute eye irritation / corrosion of a test substance
- 13. Calculation of pharmacokinetic parameters from a given data
- 14. Biostatistics methods in experimental pharmacology(student 's t test, ANOVA)
- 15. Biostatistics methods in experimental pharmacology (Chi square test, Wilcoxon Signed Rank test)

*Experiments are demonstrated by simulated experiments/videos

1. Study of laboratory animals and their handling (a. Frogs, b. Mice, c. Rats addinger pigs, c. Rabbits).

2. Study of physiological salt solutions used in experimental pharmacology.

3. Study of laboratory appliances used in experimental pharmacology.

4. Study of use of anesthetics in laboratory animals.

5. To record the dose response curve of Ach using isolated ileum/rectus abdominis muscle preparation.



- 6. To carry out bioassay of Ach using isolated ileum/rectus abdominis muscle preparation by interpolation method.
- 7. To carry out bioassay of Ach using isolated ileum/rectus abdominis muscle preparation by three-point method.
- 8. To record the dose response curve of Histamine using isolated guinea -pig ileum preparation.
- 9. Study of agonistic and antagonistic effects of drugs using isolated guinea -pig ileum preparation.
- 10. To carry out bioassay of Histamine using isolated guinea -pig ileum preparation by interpolation method.
- 11. To carry out bioassay of Histamine using guinea -pig ileum preparation by three-point method.
- 12. To study the routes of administration of drugs in animals (Rats, Mice, Rabbits).
- 13. Study of theory, principle, procedure involved and interpretation of given results for the following experiments: a) Analgesic property of drug using Analgesiometer. b) Anti-inflammatory effect of drugs using rat-paw edema method. c) Anticonvulsant activity of drugs using maximal electroshock and pentylene tetrazole methods. d) Antidepressant activity of drugs using pole climbing apparatus and pentobarbitone induced sleeping time methods. e) Locomotor activity evaluation of drugs using Actophotometer and rotarod. f) Cardiotonic activity of drugs using isolated frog heart and mammalian heart preparations.

*Experiments are demonstrated by simulated experiments/videos.

NUMBER OF HOURS OF PROGRAMME

- 1. B. PHARM IV SEM 4hrs/week
- 2. B. PHARM V SEM-4hrs/week
- 3. B. PHARM VI SEM 4hrs/week
- 4. PHARMD III YEAR- 4hrs/week

LIST OF STUDENTS:

IVand V SEM B. PHARM:

SLNO	REGISTER NUMBER	NAME OF THE CANDIDATE
1.	19P2151	Abhishek A.
2.	19P2152	Ajith S
3.	19P2153	Aleena Antony
4.	19P2154	Ankit Kushwaha
5.	19P2155	Baby Nandini N
6.	19P2156	Balu Prasanth S
7.	19P2157	BanlumlangMarbaniang
8.	19P2158	Bikando D Marak
9.	19P2159	Bramhotri Rout
10.	19P2160	C.Lalthianghlima







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11.	19P2161	C.Shyla Shree	
12.	19P2162	Cebin Joseph	
13.	19P2163	Chandana G	
14.	19P2164	Chandu BP	
15.	19P2165	Charitha M	
16.	19P2166	Christy KJ	111111111111111111111111111111111111111
17.	19P2167	DaphishaMarbaniang	
18.	19P2168	Deep Bhowmick	
19.	19P2169	Deepa M	
20.	19P2170	Dhruva Hegde	
21.	19P2171	Divakar M	
22.	19P2172	Divya M	
23.	19P2173	Divya P	
24.	19P2174	Durga Prasad	
25.	19P2175	Gagan C	
26.	19P2176	M. Ganesh Kumar	
27.	19P2177	Gururaj M	
28.	19P2178	Hamsa Priya G	
29.	19P2179	Hrithik Kumar	
30.	19P2180	Illakkiya S	
31.	19P2181	Jasmitha A	
32.	19P2182	Kabhyashree	
33.	19P2183	Karthik V.	_
34.	19P2184	Kavya S	
35.	19P2185	Keerthana lyer	
36.	19P2186	Kenneth Osbert	
37.	19P2186	Kevin John	_
38.	19P2188	Kunal Levi	
39.	19P2189	Lavanya R	
40.	19P2190	Lekha	
41.	19P2191	Likhitha	
42.	19P2192	Madhumita R	
43.	19P2193	Mahesh	
44.	19P2194	Manisha M	
45.	19P2195	MebanraplangMaboh	
46.	19P2196	Mohammed Usman	
47.	19P2197	Mohit Nandwana	
48.	19P21989	Ramya N	1
49.	19P21989	Nikhil	4
50.	19P2200	Nimisha Gupta	1
51.	19P2201	Nirma T	K
52.	19P2201 19P2202	Nitiesh	C
53.	19P2202 19P2203	NochotenuTetso	1-
	19P2203	PC Lalramhmua	
54.	Activities of the contract of	R.Pavan Kumar	
55.	19P2205		
56.	19P2206	Pooja K	
57.	19P2207	Probash	
58.	19P2208	Prakash	

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150.	18P0490	Medakisamati
151.	18p0491	Mir Raza Abbas
152.	18p0492	Monisha S
153.	18p0493	Mukesh kumar rauniyar
154.	18P0494	Mukesh Thakur
155.	18p0495	Murali.b
156.	18p0496	Muskan
157.	18p0497	Narendiran .R
158.	18P0498	S. Naresh Kumar
159.	18p0499	Navin
160.	18p0500	Neha Singh
161.	18p0501	Nikhath Fathima m
162.	18p0501	Nikhil kumar BN
163.	18p0502	Nikhil k
164.	18P0504	Olivia Miriam
165.	18p0505	Oviya.p
166.	18P0506	Pavankumar sc
167.	18P0507	Pavithra
168.	The second secon	
168.	18p0508 18p0509	Pradeep p Prakash
	18P0510	PREETHI.K
170.		
171.	18P0511	PUNITH KUMAR L
172.	18p0512	Rakesh.DR
173.	18p0513	Rakshitha cs
174.	18P0514	RANJITH.M
175.	18p0515	RASHMI.S.
176.	18p0516	Rashmitha.R
177.	18p0517	Rohith N
178.	18p0518	Rupchi t Sangma
179.	18p0519	Sahana
180.	18P0520	Sampada Adhikari
181.	18p0521	SANTHALA CHAITHANAYA PRASAD
182.	18P0522	Sasikirana.S
183.	18p0523	Shilpa.B
184.	18p0524	Shiva Kumar m
185.	18P0525	Shivangi Chaudhary
186.	18p0526	Shravani k
187.	18p0527	Siddharth Bairagi
188.	18P0528	snigdhasenapati
189.	18p0529	Sobana.s
190.	18P0530	Sobana.s Somashekar R Krupani
191.	18p0531	Somashekar R Krupani Suchithra.G Chikkaba Suravi Dutta Varthur
192.	18P0532	Suravi Dutta Varth
193.	18p0533	P.Surendar
194.	18P0534	Swetha M
195.	18p0535	Tamilselvan. M
196.	18p0536	Thanuja R

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198.	18p0538	Uday Kiran.g
199.	18p0539	P. Velavan
200.	18p0540	Vengatachalam.m
201.	18P0541	Venu G
202.	18p0542	Vijay Kumar. N
203.	18p0543	Vijayalakshmi. M
204.	18P0544	Yashwanth v reddy
205.	18p0554	Ahmed Thabit Omer
206.	18p0555	Azzam
207.	18P0556	Effen G.Venkadee
208.	18P0557	EKUNBOYEJO IFEOLUWA
209.	19P2247	Kamala v patel
210.	19P2248	Sahnoorqureshi
211.	19p2249	Samarth sj
212.	19p2251	Shanmuga sundaram.N
213.	19p2252	Veda M
214.	19P2253	Ratneshkumarsingh

III PHARM D:

SL NO	REGISTER NUMBER	NAME OF THE CANDIDATE
215.	18Q0301	Aishwarya Rakesh
216.	18Q0302	Anika Varsha Thamra S
217.	18Q0303	Bhagyashree
218.	18Q0304	Christo Sebastian
219.	18Q0305	Divya M
220.	18Q0306	Freny Mathew Shiju
221.	18Q0307	RoshiniRaj
222.	18Q0308	Harshitha N
223.	18Q0309	Jane Nisha Soans
224.	18Q0310	Keerthana MM
225.	18Q0311	Lavanya M
226.	18Q0312	Lomash Timsina
227.	18Q0313	Moulidharan R
228.	18Q0314	Niharika S Shetty
229.	18Q0315	Nischal Agrawal
230.	18Q0316	Pavan Kumar K
231.	18Q0317	PoluriSrimadhurmayi Krupat
232.	18Q0318	SM Poornachandra
233.	18Q0319	Raghavi A varthu
234.	18Q0320	Raksha BH
235.	18Q0321	Rakshitha M
236.	18Q0322	Sahana G
237.	18Q0323	Shiwangi Bhandari
238.	18Q0324	Shridhar M
239.	18Q0325	Sobin Thomas
240.	18Q0326	Sreshi Kumari

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241.	18Q0327	Syed Moqthadeer Ahamed
242.	18Q0328	Tana Donyi Tara
243.	18Q0329	Vanlalhriatpuii
244.	18Q0330	Rashmitha R

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