Index	Year : III
	Semester : V

Vision, Mission and Program Educational Objective	Year : III
	Semester : V

Vision-

Carve an institution with unparallel achievements in pharmacy education.

Mission-

- Enrich the lives of people locally and globally by nurturing such pharmacists who will be leaders in pharmacy practice and drug discovery.
- Train our students to become entrepreneurs and job creators.
- Develop innovation skills and lifelong learning to accept the challenges of ever changing health care needs.

Program Educational Objectives of the UG in Pharmacy are:

PEO 1. Excel in professional career and/or higher education by acquiring knowledge in research and development of pharmacy principles.

PEO 2. To implement pharmacy curriculum in order to provide solutions that are beneficial for the technical knowledge of research and economics.

PEO 3. Exhibit professionalism, ethical attitude, communication skills, team work in their profession and adapt to current trends by engaging in lifelong learning.

Student Details	Year : III
	Semester : V

S. No.	Roll No	Student Name
1.	302104117001	Abhishek Dewangan
2.	302104117002	Ajay Kumar
3.	302104117003	Ajit Verma
4.	302104117005	Akhil Verma
5.	302104117006	Akhilesh Maurya
6.	302104117007	Ayushi Gupta
7.	302104117008	Ayushi Sharma
8.	302104117009	Barnamaye Jana
9.	302104117010	Bharti Athkari
10.	302104117011	Bhekh Lal Banjare
11.	302104117012	Bhupendra Giri Goswami
12.	302104117013	Chaitanya Jaiswal
13.	302104117014	Chanda Wadde
14.	302104117015	Chandresh
15.	302104117016	Chetna Birla
16.	302104117017	Dageshwar Sahu
17.	302104117018	David Jangde
18.	302104117019	Deepak Kumar Sahu
19.	302104117020	Dhanesh Kumar Sahu

20.	302104117021	Dharmendra Nishad
21.	302104117023	Dileshwar
22.	302104117024	Duleshwar Prasad Sahu
23.	302104117025	Gauri Shankar Yadav
24.	302104117026	Gautam Kumar
25.	302104117028	Gulshan Nishad
26.	302104117030	Harish Kumar Verma
27.	302104117032	Harsimran Kaur Kohli
28.	302104117033	Hemanshi Pal
29.	302104117034	Hemlata Jatwar
30.	302104117035	Himanshu
31.	302104117036	Himanshu Sahu
32.	302104117038	Hirendra Kumar
33.	302104117039	Homeshwar Lal Verma
34.	302104117040	Kamal Hasan Jangde
35.	302104117041	Khelsai
36.	302104117042	Khetrapal Ghritdode
37.	302104117043	Khushbu Chelak
38.	302104117044	Kshamanidhi Sahu
39.	302104117045	Lav Kumar Banjare
40.	302104117047	Madhu
41.	302104117048	Mahendra Kumar Sahu
42.	302104117051	Manish Kumar Dewangan
43.	302104117052	Mayank Garhewal
44.	302104117054	Md Aftab Quereshi
45.	302104117055	Milesh Kumar Chandrakar

46.	302104117057	Nageshwar Sahu
47.	302104117058	Narendra
48.	302104117061	Niharika Sahu
49.	302104117064	Omesh Vaishnav
50.	302104117065	Piyush Sahu
51.	302104117066	Pragya Singh
52.	302104117067	Pranish Sahu
53.	302104117069	Raghuveer Chandravanshi
54.	302104117070	Ramdev Sagar Dhruw
55.	302104117071	Rishabhdev Sen
56.	302104117073	Ruchi Gupta
57.	302104117074	Rupesh Kumar Sahu
58.	302104117075	Rupesh Kumar Sahu
59.	302104117076	Sachin Sahu
60.	302104117077	Sana Fatima
61.	302104117078	Sana Hasan
62.	302104117079	Sanjay Kumar Verma
63.	302104117081	Shashikala
64.	302104117082	Shivam Gupta
65.	302104117083	Shubham Kumar
66.	302104117084	Shubham Verma
67.	302104117085	Simran Jatwar
68.	302104117086	Smita Suthar
69.	302104117087	Somnath
70.	302104117088	Sourav Maity
71.	302104117089	Subhashini Markam

72.	302104117090	Sudha Jumani
73.	302104117091	Suraj Kumar Sinha
74.	302104117092	Suresh Kumar
75.	302104117093	Tekeshwar Prasad Sahu
76.	302104117094	Triloki
77.	302104117095	Trishala Singh
78.	302104117096	Upasna
79.	302104117097	Vinay Shankar Panday
80.	302104117098	Vinod Dewangan
81.	302104117099	Vinod Kumar
82.	302104117100	Vishal Kumar Dewangan
83.	302104117101	Yash Bhagwani
84.	302104118310	Manisha Dewangan
85.	302104118311	Pranjal Dixit
86.	302104118312	Uma Verma

Columbia Institute of Pharmacy, Raipur

Academic Calendar	Year : III
	Semester : V

INSTITUTIONAL ACADEMIC CALENDAR & SCHEDULE OF EXAMINATION **B. PHARM** **NOV DEC 2019**

S. No.	Particular of Academic/Exam Activity	VII Semester (Reg./Backlog)	V Semester (Reg./Backlog)	III Semester (Reg./Backlog)	I Semester (Reg./Backlog)
1	**Start of Session***	22 July 2019	22 July 2019	29 July 2019	29 July 2019
2	**Commencement date of submission of online exam form***	19 October 2019	03 November 2019	14 November 2019	02 December 2019
	Last date of submission of exam form without late fee*	26 October 2019	10 November 2019	21 November 2019	09 December 2019
	Last date of submission of exam form with late fee Rs. 30/-*	31 October 2019	15 November 2019	26 November 2019	14 February 2019
	Last date of submission of exam form with late fee Rs. 120/-*	05 November 2019	20 November 2019	01 December 2019	19 December 2019
	Last date of submission of exam form with late fee Rs. 200/-*	10 November 2019	25 November 2019	06 December 2019	24 December 2019
	Last date of approval of online examination form by Institute*	11 November 2019	26 November 2019	07 December 2019	25 December 2019
3	**Link available to the Institute for detention of the Candidates* (From - To)**	16 November 2019 17 November 2019	01 December 2019 02 December 2019	12 December 2019 13 December 2019	30 December 2019 31 December 2019
	SESSIONAL EXAMINATION				
4	**First Sessional Exam (From - To)**	**02 September 2019** **07 September 2019**	**16 September 2019** **21 September 2019**	**30 September 2019** **05 October 2019**	**14 October 2019** **19 October 2019**
	Last date of Submission of question paper for 1st Sessional exam	On or before 30 August 2019	On or before 13 September 2019	On or before 27 September 2019	On or before 11 October 2019
5	**Second Sessional Exam (From - To)**	**08 November 2019** **13 November 2019**	**18 November 2019** **23 November 2019**	**02 December 2019** **07 December 2019**	**16 December 2019** **23 December 2019**
	Last date of Submission of question paper for 2nd Sessional exam	On or before 05 November 2019	On or before 15 November 2019	On or before 29 November 2019	On or before 13 December 2019
6	**Last date of Submission of Sessional marks to Exam section**	18 November 2019	02 December 2019	15 December 2019	01 January 2020
7	**Submission of Online sessional marks* (From - To)**	**20 November 2019** **24 November 2019**	**04 December 2019** **08 December 2019**	**17 December 2019** **21 December 2019**	**03 January 2020** **07 January 2020**
	Admit Card and Verification sheet can be downloded before 3 days of commencement of Theory/Practical Examination as per Schedule				
8	**Schedule for Theory Exams* (From - To)**	**20 November 2019** **29 November 2019**	**04 December 2019** **13 December 2019**	**17 December 2019** **31 December 2019**	**03 January 2020** **15 January 2020**
9	**Schedule for Practical Exams* (From - To)**	**01 December 2019** **05 December 2019**	**15 December 2019** **20 December 2019**	**01 January 2020** **05 January 2020**	**16 January 2020** **21 January 2020**
10	**Online submission of practical marks* (From - To)**	**01 December 2019** **08 December 2019**	**15 December 2019** **23 December 2019**	**01 January 2020** **08 January 2020**	**16 January 2020** **24 January 2020**
11	Date of Declaration of Result*	10 January 2020	24 January 2020	08 February 2020	25 February 2020

*** As per CSVTU academic calendar**

Note: 1. Student will have to fill up Examination form for Regular & Backlog/ Supplementary Exams separately (separate Exam form for each semester of exam)
2. The result declaration dates are liable to preponed/ postponed

Examination Section **Principal**

Columbia Institute of Pharmacy, Raipur

Time Table	Year : III
	Semester : V

COLUMBIA INSTITUTE OF PHARMACY, RAIPUR
Time Table 2019-20
B. Pharm V SEM Batch A

W.e.f.: 22/07/19

Date Time →	9:00 - 9:55 A.M.	9:55 - 10:45 A.M.	10:45 - 11:35 A.M.	11:35 - 12:25 PM	12:25 - 12:52 P.M.	12:55 - 1:45 P.M.	1.45 - 2:35 P.M.	2:35 - 3:25 P.M.	3:25 – 4:10 PM
Monday	Ph'Cognosy (SPR)	Med Chem II (GK)	Ph. Juris (SM)	Ph'Cology (SK)	BREAK	Ph'Cology A1 (RB) Ph'Cology A2 (SK) (Lab 12&13)			
Tuesday	Med Chem II (GK)	Ph. Juris (OY)	Library	For. Pharm. (BG)		Ph'Cology (RB)	PD/English (AM)	Ph'Cognosy (SPR)	Extra Curricular
Wednesday	Ph. Juris (OY)	Library	For. Pharm. (BG)	Med Chem II (AG)		Ph'Cognosy & Phyto. Lab (SPR) A1 Ph'Cognosy & Phyto. Lab (RY) A2 (Lab7&8)			
Thursday	Ph'Cology (SK)	For. Pharm. (BG)	Ph'Cognosy (SPR)	Library		Ph'Cognosy (SPR) (CT/T)	PD/English (AM)	Ph'Cology (RB) (CT/T)	Extra Curricular
Friday	For. Pharm. (BG)	Ph'Cognosy (SPR)	Med Chem II (AG)	Ph. Juris (SM)		Formulative Pharmacy Lab A1(SM) Formulative Pharmacy Lab A2(AG) (Lab 1&2)			
Saturday	Med Chem II (GK) (CT/T)	For. Pharm. (BG) (CT/T)	Ph. Juris (SM) (CT/T)	Ph'Cology (RB)		Extra Curricular			

SPR	Dr. S. P Rao	BG	Dr. Bina Gidwani	SM	Ms. Sandhya Mishra	GK	Mr. Gunjan Kalyani
SK	Mr. Sudhir Khatane	RB	Ms. Ruchi Bhattacharya	AM	Mr. Apurb Mukherjee		
RY	Mr. Rahul Yadav	AG	Ms. Anjali Gaute	OY	Ms. Omika Yadu		

Academic Incharge

Prepared By

Principal
Columbia Institute of Pharmacy, Raipur

COLUMBIA INSTITUTE OF PHARMACY, RAIPUR
Time Table 2019-20
B. Pharm V SEM Batch B

W.e.f.: 22/07/19

Date / Time	9:00 - 9:55 A.M.	9:55 - 10:45 A.M.	10:45 - 11:35 A.M.	11:35 - 12:25 PM	12:25 - 12:52 P.M.	12:55 - 1:45 P.M.	1.45 - 2:35 P.M.	2:35 - 3:25 P.M.	3:25 – 4:10 PM
Monday	For. Pharm. (BG)	PD/English (AM)	Library	Med Chem II (GK)	BREAK	Ph'Cognosy (RY)	Med Chem II (AG)	Ph. Juris (OY)	Extra Curricular
Tuesday	Ph'Cognosy & Phyto. Lab (CS) B1 Ph'Cognosy & Phyto. Lab (RY) B2 (Lab7&8)					Med Chem II (AG)	For. Pharm. (BG)	Ph'Cology (RB)	Library
Wednesday	PD/English (AM)	Med Chem II (GK)	Ph'Cognosy (RY)	Ph'Cology (RB)		Ph. Juris (OY)	Ph'Cology (SK)	For. Pharm. (BG)	Library
Thursday	For. Pharm. Lab B1 (SM) For. Pharm. Lab B1 (AG) (Lab 1&2)					Ph'Cology (SK)	For. Pharm. (BG)	Ph'Cognosy (RY)	Ph. Juris (SM)
Friday	Ph'Cology B1 (RB) Ph'Cology B2 (SK) (Lab 12&13)					Ph. Juris (SM)	Ph'Cognosy (RY)	Ph'Cology (SK) (CT/T)	Extra Curricular
Saturday	Ph. Juris (SM) (CT/T)	Ph'Cognosy (RY) (CT/T)	Med Chem II (GK) (CT/T)	For. Pharm. (BG) (CT/T)		Extra Curricular			

SPR	Dr. S. P Rao	BG	Dr. Bina Gidwani	SM	Ms. Sandhya Mishra	GK	Mr. Gunjan Kalyani
SK	Mr. Sudhir Khatane	RB	Ms. Ruchi Bhattacharya	AM	Mr. Apurb Mukherjee		
RY	Mr. Rahul Yadav	AG	Ms. Anjali Gaute	OY	Ms. Omika Yadu		

Academic Incharge

Prepared By

Principal
Columbia Institute of Pharmacy, Raipur

Syllabus	Year : III
	Semester : V

Syllabus
B. Pharm. V Semester
Formulative Pharmacy (BP502T) (Theory)

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Semester: 5th **Branch: B. Pharmacy**
Subject: Formulative Pharmacy (BP502T) (Theory) **Subject Code: 341552 (41)**
Total Theory Periods: 45 **Total Tut. Periods: 15**
Total Marks in End Semester Examination: 75
Minimum number of class tests to be conducted: 02

45 Hours

Scope: Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product.

Objectives: Upon completion of the course the student shall be able to:

1. Know the various pharmaceutical dosage forms and their manufacturing techniques.
2. Know various considerations in development of pharmaceutical dosage forms
3. Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality

Course content:

3 hours/ week

UNIT-I **07 Hours**

Preformulation Studies: Introduction to Preformulation, goals and objectives, study of physicochemical characteristics of drug substances.

a) **Physical properties:** Physical form (crystal & amorphous), particle size, shape, flow properties, solubility profile (pKa, pH, partition coefficient), polymorphism
b) **Chemical Properties:** Hydrolysis, oxidation, reduction, racemisation, polymerization, BCS classification of drugs

Application of preformulation considerations in the development of solid, liquid oral and parenteral dosage forms and its impact on the stability of dosage forms.

UNIT-II **10 Hours**

Tablets:

a) Introduction, ideal characteristics of tablets, classification of tablets. Excipients, Formulation of tablets, granulation methods, compression and processing problems. Equipment and tablet tooling.

b) Tablet coating: Types of coating, coating materials, formulation of the coating composition, methods of coating, equipment employed and defects in the coating.
c) Quality control tests: In process and finished product tests

Liquid orals: Formulation and manufacturing consideration of solutions, suspensions and emulsions; Filling and packaging; evaluation of liquid orals official in pharmacopoeia

UNIT-III **08 Hours**

Capsules:

a) ***Hard gelatin capsules*****:** Introduction, Extraction of gelatin and production of hard gelatin capsule shells. size of capsules, Filling, finishing and special techniques of the formulation of hard gelatin capsules. In the process and final product quality control tests for capsules.

b) ***Soft gelatin capsules*****:** Nature of shell and capsule content, size of capsules, importance of base adsorption and minimum/gram factors, production, in process and final product quality control tests. Packing, storage and stability testing of soft gelatin capsules.

Pellets: Introduction, formulation requirements, pelletization process, equipments for manufacture of pellets

UNIT-IV **10 Hours**

Parenteral Products:

a. Definition, types, advantages and limitations. Preformulation factors and essential requirements, vehicles, additives, importance of istonicity
b. Production procedure, production facilities and controls.
c. Formulation of injections, sterile powders, emulsions, suspensions, large volume parenterals and lyophilized products, Sterilization.
d. Containers and closures selection, filling and sealing of ampoules, vials and infusion fluids. Quality control tests.

Ophthalmic Preparations: Introduction, formulation considerations; formulation of eyedrops, eye ointments and eye lotions; methods of preparation; labelling, containers; evaluation of ophthalmic preparations.

UNIT-V **10 Hours**

Cosmetics: Formulation and preparation of the following cosmetic preparations: lipsticks, shampoos, cold cream and vanishing cream, tooth pastes, hair dyes and sunscreens.

Pharmaceutical Aerosols: Definition, propellants, containers, valves, types of aerosol systems; formulation and manufacture of aerosols; Evaluation of aerosols; Quality control and stability studies.

Packaging Materials Science: Materials used for packaging of pharmaceutical products, factors influencing the choice of containers, legal and official requirements for containers, stability aspects of packaging materials, quality control tests.

Syllabus
B. Pharm. V Semester
Formulative Pharmacy (BP506P) (Practical)

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Semester: 5th **Branch: B. Pharmacy**
Subject: Formulative Pharmacy – Practical (BP506P) **Subject Code: 341561 (41)**
Total Practical Periods: 04 Hours/week
Total Marks in the End Semester: 35

1. Preformulation study for prepared granules
2. Preparation and evaluation of Paracetamol tablets
3. Preparation and evaluation of Aspirin tablets
4. Coating of tablets
5. Preparation and evaluation of Tetracycline capsules
6. Preparation of Calcium Gluconate injection
7. Preparation of Ascorbic Acid injection
8. Preparation of Paracetamol Syrup
9. Preparation of Eye drops
10. Preparation of Pellets by extrusion spheronization technique
11. Preparation of Creams (cold / vanishing cream)
12. Evaluation of Glass containers

Recommended Books: (Latest Editions):

1. Pharmaceutical dosage forms - Tablets, volume 1 -3 by H.A. Liberman, Leon Lachman &J.B.Schwartz
2. Pharmaceutical dosage form - Parenteral medication vol- 1&2 by Liberman & Lachman
3. Pharmaceutical dosage form disperse system VOL-1 by Liberman&Lachman
4. Pharmaceutics (Basic Principal and Formulations) by D. K. Tripathi, PharmaMed Press, Hyderabad.
5. Modern Pharmaceutics by Gilbert S. Banker & C.T. Rhodes, 3rd Edition
6. Remington: The Science and Practice of Pharmacy, 20th edition Pharmaceutical Science (RPS)
7. Theory and Practice of Industrial Pharmacy by Liberman & Lachman
8. D. K. Tripathi, Industrial Pharmacy (A comprehensive Approach), PharmaMed Press, Hyderabad.
9. Pharmaceutics- The science of dosage form design by M.E.Aulton, Churchill livingstone, Latest edition
10. Introduction to Pharmaceutical Dosage Forms by H. C.Ansel, Lea &Febiger, Philadelphia, 5 th edition, 2005
11. Drug stability - Principles and practice by Cartensen & C.J. Rhodes, 3rd Edition, Marcel Dekker Series, Vol 107.

Semester Plan	Year : III
	Semester : V

SEMESTER PLAN

Academic Year: 2019-20
Name of the Program: B. Pharm.
Semester: V (A)
Name of the Subject: Formulative Pharmacy
Subject Code: 341552 (41)

Subject in-charge: Dr. Beena Gidwani
Designation: Associate Professor

No. of Lectures: 29
Duration of Lecture: 50 Min

No. of Class: 45

References:

T1 - Formulative Pharmacy – Pharmaceutics (Basic Principal and Formulations) by D. K. Tripathi, PharmaMed Press, Hyderabad.

T2 - Theory and Practice of Industrial Pharmacy by Liberman & Lachman

T3 - D. K. Tripathi, Industrial Pharmacy (A comprehensive Approach), PharmaMed Press, Hyderabad.

Module No.	Class No.	Lecture No.	Date	Name of Topic	PO	Ref. Text Book
1.	1.	1	23/07/2019	Introduction to preformulation, goals and objectives	PO1,PO7,PO9 PO10	T1, T3
	2.	2	24/07/2019	Study of Physical properties: Physical form (crystal & amorphous), polymorphism	PO1,PO7,PO9 PO10	T1, T3
	3.	3	25/07/2019	Study of Physical properties: particle size, shape, flow properties, solubility profile (pKa, pH, partition coefficient),	PO1,PO7,PO9 PO10	T1, T3
	4.	4	26/07/2019	Study of Chemical Properties: Hydrolysis, oxidation, reduction.	PO1,PO7,PO9 PO10	T1, T3

	5.	5	27/07/2019	Chemical Properties: Racemisation, polymerization, BCS classification of drugs	PO1,PO7,PO9	T1, T3
	6.	6	01/08/2019	Application of preformulation considerations in the development of solid, liquid oral and parenteral dosage forms and its impact on the stability of dosage forms.	PO1,PO7,PO9	T1, T3
	7.		02/08/2019	Revision		
	8.		03/08/2019	Revision		
2.	9.	7	06/08/2019	Introduction about tablets, ideal characteristics of tablets, classification of tablets, excipients	PO1,PO7,PO9 PO10, PO11	T1, T2, T3
	10.	8	07/08/2019	Formulation of tablets, granulation methods, compression and processing problems. Equipment and tablet tooling.	PO1,PO7,PO9 PO10	T1, T2, T3
	11.		08/08/2019	Class test		
	12.	9	09/08/2019	Tablet coating: Types of coating, coating materials, formulation of the coating composition, methods of coating, equipment employed and defects in the coating	PO1,PO7,PO9	T2
	13.		10/08/2019	Revision		
	14.	10	13/08/2019	Quality control tests: In process and finished product tests	PO1,PO7,PO9 PO10, PO11	T1, T2, T3
	15.	11	20/08/2019	Liquid orals: Formulation and manufacturing consideration of solutions, suspensions and emulsions; Filling and packaging; evaluation of liquid orals official in pharmacopoeia.	PO1,PO7,PO9 PO10, PO11	T1, T2, T3
3.	16.	12	22/08/2019	Introduction about Capsules, types of capsules, *Hard gelatin capsules*: Introduction, Extraction of gelatin and production of hard gelatin capsule shells.	PO1,PO7,PO9 PO10, PO11	T1, T2, T3
4.	17.		23/08/2019	Class Test		
	18.	13	27/08/2019	Size of capsules, Filling, finishing and special techniques of the formulation of hard gelatin capsules. In the process	PO7,PO9 PO10, PO11	T1, T2, T3

				and final product quality control tests for capsules.		
	19.	14	28/08/2019	*Soft gelatin capsules*: Nature of shell and capsule content, size of capsules, importance of base adsorption and minimum/gram factors, production.	PO3,PO4 PO7, PO11	T2, T3
	20.	15	03/09/2019	In process and final product quality control tests. Packing, storage and stability testing of soft gelatin capsules.	PO3,PO4 PO7, PO11	T2, T3
	21.		07/09/2019	Revision		
	22.	16	11/09/2019	Introduction about pellets, formulation requirements, pelletization process, equipments for manufacture of pellets	PO3,PO4 PO7, PO11	T2, T3
	23.		12/09/2019	Revision		
	24.		13/09/2019	Revision		
	25.		17/09/2019	1st Sessional		
5.	26.	17	21/09/2019	Definition of parenterals, types, advantages and limitations.	PO5,PO10, PO11	T2, T3
	27.	18	21/09/2019	Preformulation factors and essential requirements, vehicles, additives, importance of istonicity.	PO1,PO2, PO3	T2, T3
	28.	19	24/09/2019	Production procedure, production facilities and controls.	PO5,PO10, PO11	T2, T3
	29.	20	25/09/2019	Formulation of injections, sterile powders, emulsions, suspensions, large volume parenterals and lyophilized products, Sterilization	PO5,PO10, PO11	T2, T3
	30.	21	26/09/2019	Containers and closures selection, filling and sealing of ampoules, vials and infusion fluids. Quality control tests.	PO5,PO10, PO11	T2, T3
	31.		28/09/2019	Revision		
	32.		01/10/2019	Class Test		
5	33.	22	03/10/2019	Ophthalmic Preparations: Introduction, formulation considerations	PO9,PO10, PO11	T2, T3
	34.	23	04/10/2019	Formulation of eyedrops, eye ointments and eye lotions;	PO9,PO10, PO11	T2, T3

				methods of preparation; labelling, containers; evaluation of ophthalmic preparations.		
	35.		06/10/2019	Class test		
5.	36.	24	09/10/2019	Cosmetics: Formulation and preparation of the following cosmetic preparations: lipsticks, shampoos	PO9,PO10, PO11	T2, T3
	37.	25	11/10/2019	Cold cream and vanishing cream, tooth pastes, hair dyes and sunscreens.	PO9,PO10, PO11	T2, T3
	38.	26	12/10/2019	Pharmaceutical Aerosols: Definition, propellants, containers, valves, types of aerosol systems.	PO1,PO7,PO9 PO10	T1, T3
	39.	27	15/10/2019	Formulation and manufacture of aerosols; Evaluation of aerosols; Quality control and stability studies.	PO1,PO7,PO9 PO10	T1, T3
	40.		18/10/2019	Class Test		
	41.		22/10/2019	Revision		
	42.		23/10/2019	Revision		
	43.	28	24/10/2019	Packaging Materials Science: Materials used for packaging of pharmaceutical products.	PO1,PO7,PO9 PO10	T1, T3
	44.	29	25/10/2019	Factors influencing the choice of containers, legal and official requirements for containers, stability aspects of packaging materials, quality control tests.	PO1,PO7,PO9 PO10	T1, T3
	45.		29/10/2019	Revision		

Subject in-charge Principal

SEMESTER PLAN

Academic Year:	2019-20		
Name of the Program:	B. Pharm.	**Semester:**	V (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552 (41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Associate Professor
No. of Lectures:	29	**Duration of Lecture:**	50 Min
No. of Class:	40		

References:

T1 - Formulative Pharmacy – Pharmaceutics (Basic Principal and Formulations) by D. K. Tripathi, PharmaMed Press, Hyderabad.

T2 - Theory and Practice of Industrial Pharmacy by Liberman & Lachman

T3 - D. K. Tripathi, Industrial Pharmacy (A comprehensive Approach), PharmaMed Press, Hyderabad.

Module No.	Class No.	Lecture No.	Date	Name of Topic	PO	Ref. Text Book
1.	1.	1	27/07/2019	Introduction to preformulation, goals and objectives	PO1,PO7,PO9 PO10	T1, T3
	2.	2	28/07/2019	Study of Physical properties: Physical form (crystal & amorphous), polymorphism	PO1,PO7,PO9 PO10	T1, T3
	3.	3	29/07/2019	Study of Physical properties: particle size, shape, flow properties, solubility profile (pKa, pH, partition coefficient),	PO1,PO7,PO9 PO10	T1, T3
	4.	4	30/07/2019	Study of Chemical Properties: Hydrolysis, oxidation, reduction.		
	5.	5	05/08/2019	Chemical Properties: Racemisation, polymerization, BCS classification of drugs	PO1,PO7,PO9	T1, T3
	6.	6	06/08/2019	Application of preformulation considerations in the development of solid, liquid oral and parenteral dosage forms and	PO1,PO7,PO9	T1, T3

				its impact on the stability of dosage forms.		
	7.		08/08/2019	Class Test		
2.	8.	7	10/08/2019	Introduction about tablets, ideal characteristics of tablets, classification of tablets, excipients	PO1,PO7,PO9 PO10, PO11	T1, T2, T3
	9.	8	11/08/2019	Formulation of tablets, granulation methods, compression and processing problems. Equipment and tablet tooling.	PO1,PO7,PO9 PO10	T1, T2, T3
	10.	9	12/08/2019	Tablet coating: Types of coating, coating materials, formulation of the coating composition, methods of coating, equipment employed and defects in the coating	PO1,PO7,PO9	T2
	11.		13/08/2019	Revision		
	12.	10	21/08/2019	Quality control tests: In process and finished product tests	PO1,PO7,PO9 PO10, PO11	T1, T2, T3
	13.	11	22/08/2019	Liquid orals: Formulation and manufacturing consideration of solutions, suspensions and emulsions; Filling and packaging; evaluation of liquid orals official in pharmacopoeia.	PO1,PO7,PO9 PO10, PO11	T1, T2, T3
	14.		23/08/2019	Class Test		
3.	15.	12	27/08/2019	Introduction about Capsules, types of capsules, *Hard gelatin capsules*: Introduction, Extraction of gelatin and production of hard gelatin capsule shells.	PO1,PO7,PO9 PO10, PO11	T1, T2, T3
	16.	13	28/08/2019	Size of capsules, Filling, finishing and special techniques of the formulation of hard gelatin capsules. In the process and final product quality control tests for capsules.	PO7,PO9 PO10, PO11	T1, T2, T3
	17.	14	29/08/2019	*Soft gelatin capsules*: Nature of shell and capsule content, size of capsules, importance of base adsorption and minimum/gram factors, production.	PO3,PO4 PO7, PO11	T2, T3
	18.	15	04/09/2019	In process and final product quality control tests. Packing,	PO3,PO4 PO7, PO11	T2, T3

				storage and stability testing of soft gelatin capsules.		
	19.		05/09/2019	Revision		
	20.	16	11/09/2019	Introduction about pellets, formulation requirements, pelletization process, equipments for manufacture of pellets	PO3,PO4 PO7, PO11	T2, T3
	21.		17/09/2019	1st Sessional		
4.	22.	17	22/09/2019	Definition of parenterals, types, advantages and limitations.	PO5,PO10, PO11	T2, T3
	23.	18	23/09/2019	Preformulation factors and essential requirements, vehicles, additives, importance of istonicity.	PO1,PO2, PO3	T2, T3
	24.	19	24/09/2019	Production procedure, production facilities and controls.	PO5,PO10, PO11	T2, T3
	25.	20	25/09/2019	Formulation of injections, sterile powders, emulsions, suspensions, large volume parenterals and lyophilized products, Sterilization	PO5,PO10, PO11	T2, T3
	26.	21	26/09/2019	Containers and closures selection, filling and sealing of ampoules, vials and infusion fluids. Quality control tests.	PO5,PO10, PO11	T2, T3
	27.		28/09/2019	Revision		
5	28.	22	04/10/2019	Ophthalmic Preparations: Introduction, formulation considerations	PO9,PO10, PO11	T2, T3
	29.	23	05/10/2019	Formulation of eyedrops, eye ointments and eye lotions; methods of preparation; labelling, containers; evaluation of ophthalmic preparations.	PO9,PO10, PO11	T2, T3
	30.		06/10/2019	Class Test		
5.	31.	24	07/10/2019	Cosmetics: Formulation and preparation of the following cosmetic preparations: lipsticks, shampoos	PO9,PO10, PO11	T2, T3
	32.	25	11/10/2019	Cold cream and vanishing cream, tooth pastes, hair dyes and sunscreens.	PO9,PO10, PO11	T2, T3
	33.	26	12/10/2019	Pharmaceutical Aerosols: Definition, propellants,	PO1,PO7,PO9 PO10	T1, T3

				containers, valves, types of aerosol systems.		
	34.	27	15/10/2019	Formulation and manufacture of aerosols; Evaluation of aerosols; Quality control and stability studies.	PO1,PO7,PO9 PO10	T1, T3
	35.		18/10/2019	Class test		
	36.		23/10/2019	Revision		
	37.	28	24/10/2019	Packaging Materials Science: Materials used for packaging of pharmaceutical products.	PO1,PO7,PO9 PO10	T1, T3
	38.	29	25/10/2019	Factors influencing the choice of containers, legal and official requirements for containers, stability aspects of packaging materials, quality control tests.	PO1,PO7,PO9 PO10	T1, T3
	39.		29/10/2019	Revision		
	40.		30/10/2019	Revision		

Subject in-charge Principal

Lesson Plan	Year : III
	Semester : V

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	1	**Duration of Lecture:**	50 min
Topic :	Introduction to preformulation, goals and objectives		

Learning Objective: On Completion of this lesson students will be able to know about Preformulation studies for all the drugs and dosage forms.

Teaching Aids: 1. Black board with chalk (White and colour chalk).

Teaching Points: **Preformulation studies**

- Definition of Preformulation studies
- Goals of Preformulation studies
- Objectives of Preformulation studies
- Importance of Preformulation studies Direct
- Types of Preformulation studies with example

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	2	**Duration of Lecture:**	50 min
Topic :	Study of Physical properties: Physical form (crystal & amorphous), polymorphism		

Learning Objective: On completion of this lesson the students will be able to know the types of physical parameters in Preformulation studies in details with their methods, applications and examples.

Teaching Aids:

1. Power point
2. Black board with chalk (White and colour chalk).

Teaching Points: **Physical properties as Preformulation studies**

- Definition and Introduction to physical properties
- Nature and form of drug
- Polymorphism, definition, types, examples

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	3	**Duration of Lecture:**	50 min
Topic :	Study of Physical properties: particle size, shape, flow properties, solubility profile (pKa, pH, partition coefficient),		

Learning Objective: On completion of this lesson the students will be able to know about Physical properties, particle size and flow properties of solids.

Teaching Aids:

1. Power point
2. Black board with chalk (White and colour chalk).

Teaching Points:

Physical properties -

- Particle size –unit, types of size of particles
- Methods for determining particle size
- Shape of particles, types and applications
- Flow properties of powder and solid
- Bulk density, true density, angle of repose, compressibility index
- Solubility- its definition, types, methods
- Partition coefficient – definition, criteria, method
- pH and pKa
- Handeson-Haselbach equation
- Examples and applications

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	4	**Duration of Lecture:**	50 min
Topic :	Study of Chemical Properties: Hydrolysis, oxidation, reduction		

Learning Objective: On completion of this lesson students will be able to know the chemical properties and their effect.

Teaching Aids: 1. Power point

Teaching Points: **Chemical Properties**

Hydrolysis

Oxidation and Reduction

- Introduction
- Types of Interferon
- Mechanism and reactions
- Examples and applications

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Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	5	**Duration of Lecture:**	50 min
Topic :	Chemical Properties: Racemisation, polymerization, BCS classification of drugs		

Learning Objective: On Completion of this lesson students will be able to know about chemical properties and BCS classification.

Teaching Aids: 1. Black board with chalk (White and colour chalk).

Teaching Points: **Chemical properties , Racemisation, polymerization, BCS classification of drugs**

Racemisation and polymerization

- Definition and introduction
- Types and mechanism
- Examples and applications

Biopharmaceutical classification system

- Definition and introduction
- Types and mechanism
- Examples and applications

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	6	**Duration of Lecture:**	50 min
Topic :	Application of preformulation considerations in the development of solid, liquid oral and parenteral dosage forms and its impact on the stability of dosage forms.		

Learning Objective: On completion of this lesson the students will be able to know relate the Preformulation studies with various dosage forms.

Teaching Aids:

1. Black board with chalk (White and colour chalk).

Teaching Points:

Application of preformulation

Application of Preformulation in development of –

- Solid dosage forms
- Liquid dosage forms
- Semisolid dosage forms
- Parenteral dosage forms

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	7	**Duration of Lecture:**	50 min
Topic :	Introduction about tablets, ideal characteristics of tablets, classification of tablets, excipients		

Learning Objective: On completion of this lesson the students will be able to know about tablets, types and details

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points:

Tablets

- Introduction & Definition
- Advantages and Disadvantages
- Ideal characters
- Classification/ types with example

Excipients used in tablets –

- Name of excipient, types, quantity and application

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	8	**Duration of Lecture:**	50 min
Topic :	Formulation of tablets, granulation methods, compression and processing problems. Equipment and tablet tooling.		

Learning Objective: On completion of this lesson the students will be able to know about methods of tablets preparation, tablet tooling and the equipment used. .

Teaching Aids: 1. Black board with chalk (White and colour chalk).

Teaching Points: Formulation of tablets, granulation methods, compression and processing problems. Equipment and tablet tooling.

Methods of tablet preparation

- Dry granulation
- Wet granulation
- Direct compression

Equipments and instrument used in tablet preparation.

Tablet tooling

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	9	**Duration of Lecture:**	50 min
Topic :	Tablet coating: Types of coating, coating materials, formulation of the coating composition, methods of coating, equipment employed and defects in the coating.		

Learning Objective: On completion of this lesson the students will be able to know about types of coating and the equipment used.

Teaching Aids: 1. Black board with chalk (White and colour chalk).

Teaching Points: Tablet coating: Types of coating, coating materials, formulation of the coating composition, methods of coating, equipment employed and defects in the coating.

Tablet coating

- Introduction and Definition
- Types of coating
- Methods of tablet coating

Equipments used in coating.

Defects in coating

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	10	**Duration of Lecture:**	50 min
Topic :	Quality control tests: In process and finished product tests		

Learning Objective: On completion of this lesson the students will be able to know about evaluation of tablets and IPQC parameters for solid dosage form.

Teaching Aids: 1. Black board with chalk (White and colour chalk).

Teaching Points: Quality control tests: In process and finished product tests

Evaluation parameters of tablets (As per IP, USP)

IPQC of tablets

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	11	**Duration of Lecture:**	50 min
Topic :	Liquid orals: Formulation and manufacturing consideration of solutions, suspensions and emulsions; Filling and packaging; evaluation of liquid orals official in pharmacopoeia.		

Learning Objective: On completion of this lesson the students will be able to know about liquid orals in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).

Teaching Points: **Liquid orals**

- Introduction
- Formulation consideration
- Types of liquid orals
- Solution – definition, types, methods of preparation, evaluation and application
- Suspension – definition, types, methods of preparation, evaluation and application
- Emulsion – definition, types, methods of preparation, evaluation and application

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	12	**Duration of Lecture:**	50 min
Topic :	Introduction about Capsules, types of capsules, Hard gelatin capsules: Introduction, Extraction of gelatin and production of hard gelatin capsule shells.		

Learning Objective: On completion of this lesson the students will be able to know about capsules in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points:

Capsules

- Introduction and definition
- Advantages and disadvantages
- Classification/types with example
- Ideal characters
- Formulation consideration

Hard gelatine capsules

- Gelatin - Definition, types, methods of preparation, evaluation and application
- Capsule shell

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	13	**Duration of Lecture:**	50 min
Topic :	size of capsules, Filling, finishing and special techniques of the formulation of hard gelatin capsules. In the process and final product quality control tests for capsules.		

Learning Objective: On completion of this lesson the students will be able to know about hard gelatine capsules in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points:

Capsule size

Size with Capacity

Methods and preparation of hard gelatine capsule

Filling and finishing of capsules

Evaluation of Hard gelatine capsules

IPQC of Hard gelatine capsules

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	14	**Duration of Lecture:**	50 min
Topic :	Soft gelatin capsules: Nature of shell and capsule content, size of capsules, importance of base adsorption and minimum/gram factors, production.		

Learning Objective: On completion of this lesson the students will be able to know about soft gelatine capsules in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points:

Soft gelatin capsule

Definition, types, advantages and disadvantages

Difference between hard and soft gelatine capsules

Methods and preparation of soft gelatine capsule

Filling and finishing of soft gelatine capsules

base adsorption and minimum/gram factors and its importance

Evaluation and IPQC of soft gelatine capsules

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	15	**Duration of Lecture:**	50 min
Topic :	In process and final product quality control tests. Packing, storage and stability testing of soft gelatin capsules.		

Learning Objective: On completion of this lesson the students will be able to know about soft gelatine capsules in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Soft gelatin capsule**

Packaging

Stability study

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	16	**Duration of Lecture:**	50 min
Topic :	Introduction about pellets, formulation requirements, pelletization process, equipments for manufacture of pellets		

Learning Objective: On completion of this lesson the students will be able to know about pellets in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Pellets**

- Introduction, Definition, advantages, disadvantages
- Ideal characters
- Types and size of pellets
- Formulation requirements
- Excipients used in pellets
- Methods of Pelletization
- Equipments used in pellets

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	17	**Duration of Lecture:**	50 min
Topic :	Definition of parenterals, types, advantages and limitations.		

Learning Objective: On completion of this lesson the students will be able to know about parenterals in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Parenterals**

- Introduction, Definition, advantages, disadvantages
- Ideal characters
- Types and size of parenterals
- Formulation requirements
- Excipients used in parenterals
- Methods of Preparation
- Evaluation of parenterals.

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	18	**Duration of Lecture:**	50 min
Topic :	Preformulation factors and essential requirements, vehicles, additives, importance of isotonicity.		

Learning Objective: On completion of this lesson the students will be able to know about parenterals in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Parenterals**

- Preformulation factors
- Essential requirement for parenterals
- Vehicles and additives required
- Isotonicity and its importance

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	19	**Duration of Lecture:**	50 min
Topic :	Production procedure, production facilities and controls.		

Learning Objective: On completion of this lesson the students will be able to know about parenterals in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Parenterals**

- Production procedure
- Production facilities and controls in parenterals.

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	20	**Duration of Lecture:**	50 min
Topic :	Formulation of injections, sterile powders, emulsions, suspensions, large volume parenterals and lyophilized products, Sterilization		

Learning Objective: On completion of this lesson the students will be able to know about parenterals in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Parenterals**

- Formulation of injections
- Sterile preparations
- Large volume parenterals
- Sterilization - definition, types and methods.

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	21	**Duration of Lecture:**	50 min
Topic :	Containers and closures selection, filling and sealing of ampoules, vials and infusion fluids. Quality control tests.		

Learning Objective: On completion of this lesson the students will be able to know about parenterals in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Parenterals**

- Containers and its types used in parenterals
- Closures used in parenterals
- Filling of ampoules, vials
- Sealing of ampoules, vials
- IPQC for parenterals.

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	22	**Duration of Lecture:**	50 min
Topic :	Ophthalmic Preparations: Introduction, formulation considerations.		

Learning Objective: On completion of this lesson the students will be able to know about ophthalmics in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Ophthalmic Preparations**

- Introduction and definition
- Types
- formulation considerations

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	23	**Duration of Lecture:**	50 min
Topic :	Formulation of eyedrops, eye ointments and eye lotions; methods of preparation; labelling, containers; evaluation of ophthalmic preparations..		

Learning Objective: On completion of this lesson the students will be able to know about ophthalmics in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: Formulation of eyedrops, eye ointments and eye lotions; methods of preparation; labelling, containers; evaluation of ophthalmic preparations.

Eye drops, Eye ointments and Eye lotions

- Introduction and definition
- formulation considerations
- methods of preparation
- containers and packaging
- Evaluation

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	24	**Duration of Lecture:**	50 min
Topic :	**Cosmetics:** Formulation and preparation of the following cosmetic preparations: lipsticks, shampoos.		

Learning Objective: On completion of this lesson the students will be able to know about cosmetics in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Cosmetics:** Formulation and preparation of the following cosmetic preparations: lipsticks, shampoos.

Cosmetics, Lipsticks, Shampoo

- Introduction and definition
- Formulation considerations
- methods of preparation
- containers and packaging
- Evaluation

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	25	**Duration of Lecture:**	50 min
Topic :	Cold cream and vanishing cream, tooth pastes, hair dyes and sunscreens.		

Learning Objective: On completion of this lesson the students will be able to know about cosmetics in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: Cold cream and vanishing cream, tooth pastes, hair dyes and sunscreens.

Cold cream and vanishing cream, Tooth paste, hairdyes, sunscreen

- Introduction and definition
- Formulation considerations
- Excipients used
- methods of preparation
- containers and packaging
- Evaluation
- Difference between cold cream and vanishing cream

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	26	**Duration of Lecture:**	50 min
Topic :	**Pharmaceutical Aerosols:** Definition, propellants, containers, valves, types of aerosol systems.		

Learning Objective: On completion of this lesson the students will be able to know about cosmetics in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Pharmaceutical Aerosols**

- Introduction and definition
- Formulation considerations
- Excipients used
- Propellants and its types
- methods of preparation
- containers and packaging
- Evaluation

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	27	**Duration of Lecture:**	50 min
Topic :	Formulation and manufacture of aerosols; Evaluation of aerosols; Quality control and stability studies.		

Learning Objective: On completion of this lesson the students will be able to know about aerosols in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Pharmaceutical Aerosols**

- Introduction and definition
- Types
- Formulation of aerosols
- Manufacturing of aerosols
- Evaluation of aerosols
- Stability studies

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	28	**Duration of Lecture:**	50 min
Topic :	**Packaging Materials Science:** Materials used for packaging of pharmaceutical products.		

Learning Objective: On completion of this lesson the students will be able to know about packaging in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Packaging Materials Science**

- Introduction and definition
- Types
- Material used
- Evaluation of packaging material
- Stability studies

Teacher in-charge Academic in-charge Principal

LESSON PLAN

Academic Year:	2019- 20		
Name of the Program:	B. Pharm.	**Semester:**	V (A) & (B)
Name of the Subject:	Formulative Pharmacy	**Subject Code:**	341552(41)
Subject in-charge:	Dr. Beena Gidwani	**Designation:**	Asso. Professor
Lecture No.:	29	**Duration of Lecture:**	50 min
Topic :	**Packaging Materials Science:** Factors influencing the choice of containers, legal and official requirements for containers, stability aspects of packaging materials, quality control tests		

Learning Objective: On completion of this lesson the students will be able to know about packaging in details.

Teaching Aids:

1. Black board with chalk (White and colour chalk).
2. Powerpoint

Teaching Points: **Packaging Materials Science**

- Factors influencing the choice of containers
- legal and official requirements for containers
- QC of packaging materials

Teacher in-charge Academic in-charge Principal

Program Outcome	Year : III
	Semester : V

PROGRAM OUTCOMES

1. Pharmacy Knowledge - Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
2. Planning Abilities - Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meat deadlines.
3. Problem Analysis - Utilize the principles of Scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
4. Modern Tool Usage - Learn, select, and apply appropriate methods and procedures, resources and modern pharmacy-related computing tools with an understanding of the limitations.
5. Leadership Skills - Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate facilitate improvement in health and well being.
6. Professional Identity - Understand, analyze and communicate the value of their professional roles in society (e.g. Health care professionals, promoters of health, educators, managers, employers, employees).
7. Pharmaceutical Ethics - Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
8. Communication - Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective documentation, and give and receive clear instructions.
9. The Pharmacist and Society - Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
10. Environment and Sustainability - Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
11. Life-long learning- Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

Course Outcome	Year : III
	Semester : V

On Completion of this Subject/ Course the students shall be able to understand the following:

Course Outcome	Outcome
CO1	Know the various pharmaceutical dosage forms and their manufacturing techniques
CO2	Know various considerations in development of pharmaceutical dosage forms
CO3	Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality

Course Outcome – Program Outcome Matrix	Year : III
	Semester : V

Course Outcome – Program Outcome Relationship Matrix (Indicate the relationship by "✓" marks.

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Course Outcome - Practical Experiments Matrix	Year : III
	Semester : V

SL. NO.	PRACTICAL EXPERIMENTS	COURSE OUTCOME
1	Preformulation study for prepared granules	CO1, CO2, CO3
2	Preparation and evaluation of Paracetamol tablets	CO2,CO3
3	Preparation and evaluation of Aspirin tablets	CO2, CO3
4	Preparation of Eye drops	CO1,CO3
5	Preparation of Cold Cream	CO2,CO3
6	Preparation of Vanishing Cream	CO1,CO3
7	Preparation of Paracetamol Syrup	CO2, CO3
8	Preparation of Ascorbic Acid injection	CO1,CO3
9	Preparation of Calcium Gluconate injection	CO2, CO3
10	Preparation of Pellets	CO2, CO3
11	To study the evaluation of Glass containers	CO1, CO2

Assignments	Year : III
	Semester : V

Enclosed Annexure 1

Method of Evaluation	Year : III
	Semester : V

Method of Evaluation

1. **Class Test**
2. **Assignments**
3. **Sessional Examination (CT – I & CT – II)**
4. **Practical Viva Voce**
5. **End Semester Examination**

Sessional Question Papers	Year : III
	Semester : V

Columbia Institute of Pharmacy, Raipur

B. Pharm 5th Semester I Sessional Examination **Session:** Nov - Dec 2019
Subject: Formulative Pharmacy- Theory (BP502T) **Max. Marks:** 30
Subject Code: 341552(41) **Time:** 1 hour 15 minutes **Date:** 17-09-2019

Questions	CO Matching
Q. A Multiple Choice questions (Attempt all question)	10x1=10
1. Compounds that have tendency to absorb moisture from the surrounding are called as	CO1,CO2,CO3
a. Deliquescent substances b. Hygroscopic substances c. Polymorphs d. All of the above	
2. If the angle of repose is in range of 25 to 28; the flow behavior is	CO1,CO2
a. poor b. passable c. good d. excellent	
3. BCS class II drugs have	CO2,CO3
a. High solubility High permeability b. High solubility Low permeability c. Low solubility High Permeability d. Low solubility Low permeability	
4. cold creams are ..... Type of emulsion	CO2,CO3
a. oil in water b. water in oil c. both d. None	
5. An example of sequestering agent is	CO1,CO2
a. ascorbic acid b. CaCO3 c. Titanium di oxide d. EDTA	
6. Type II glass is also known as	CO1,CO2,CO3
a. borosilicate glass b. general soda lime glass c. regular soda lime glass d. treated soda lime glass	
7. Dichlorotetrafluoro ethane is	CO2,CO3
a. propellant 11 b. propellant 12 c. propellant 114 d. propellant 227	
8. which apparatus is used to determine flash point in aerosols	CO2
a. viscometer b. pyknometer c. tag open cup apparatus d. coulter counter	
9. PSIG in aerosols refer to.....	CO1,CO2
a. per square inch glass b. propellant safety in glass c. pounds per square inch guage d. none of the above	
10. Hauners Ratio is determined by	CO1,CO2
a. tapped density/bulk density b. bulk density/tapper density c. bulk volume/tapped volume d. tapped volume/bulk volume	
Q. B Long Answer Type questions (Attempt any one question)	1x10=10
1. Discuss the formulation of aerosols with example.	CO2,CO3
2. Classify pre-formulation studies. Explain flow properties and fundamental properties with pharmaceutical applications	CO1,CO2,CO3
Q. C Short answer type question (Attempt any two questions)	2x5=10
1. Explain glass as packaging material	CO2,CO3
2. write short note on polymorphism	CO1,CO2,CO3
3. what are creams. Discuss cold cream or vanishing cream with example.	CO2,CO3

Columbia Institute of Pharmacy, Raipur Session: Nov - Dec 2019

B. Pharm 5th Semester II Sessional Examination Max. Marks: 30

Subject: Formulative Pharmacy- Theory (BP502T)

Subject Code: 341552(41) Time: 1 hour 15 minutes Date: 19-11-2019

Questions	CO Matching

Q. A Multiple Choice questions (Attempt all question) 10x1=10

1. The process in which liquid droplet is converted into solid spherical particles by using liquid nitrogen is called — CO1, CO2

a. peptization b. microencapsulation c. spheronization d. cryopelletization

2. uneven distribution of color in tablet surface is — CO2,CO3

a. cracking b. chipping c. mottling d. blooming

3. Tablets can be prepared by — CO1,CO2,CO3

a. dry granulation b. wet granulation c. direct compression d. all of the above

4. In dry gum method, 4:2:1 consist of — CO2,CO3

a. 4 part oil, 2 parts water and 1 part emulsifier b. 4 parts water, 2 parts oil and 1 part emulsifier c. 4 part emulsifier , 2 parts water and 1 part oil d. 4 part oil, 2 parts emulsifier and 1 part water

5. The ratio of plasticizer and gelatin is 0.8:1 in — CO1,CO2,CO3

a. soft gelatin capsule b. Hard gelatin capsule c. both of the above d. none of the above

6. when a solution has osmolarity equivalent to blood it is called — CO1,CO2

a. hypertonic b. hypotonic c. isotonic d. none of the above

7. direct inoculation and membrane filteration are test for — CO1,CO2

a. sterility testing b. pyrogen testing c. leakage testing d. clarity testing

8. Pyrogen test in parenterals are done by — CO2,CO3

a. rabbit test b. LAL test c. both of the above d. none of the above

9. Continental Method is used for — CO1,CO2

a. dry gum b. wet gum c. bottle method d. all of the above

10. smallest size of capsule mostly used is — CO1,CO2,CO3

a. O b. I c. 3 d. 5

Q. B Long Answer Type questions (Attempt any one question) 1x10=10

1. Discuss the formulation and manufacturing of tablets? — CO2,CO3

2. Define suspension or emulsions. Classify them and explain the method of preparation of suspension or emulsion? — CO2,CO3

Q. C Short answer type question (Attempt any two questions) 2x5=10

1. Explain the types and manufacturing of gelatin — CO1,CO2,CO3

2. write short note on any one (a) size of capsules (b) Eyedrops — CO1,CO2

3. define parenterals and enlist the types of parenteral preparations — CO1,CO2

Performance of the Students in Class Test	Year : III
	Semester : V

Enclosed Annexure 2

Performance of the Students in Sessional Examination	Year : III
	Semester : V

S. No.	Roll No	Student Name	1st CT Th (30)	2nd CT Th (30)
1.	302104117001	Abhishek Dewangan	25	24
2.	302104117002	Ajay Kumar	23	abs
3.	302104117003	Ajit Verma	23	23
4.	302104117005	Akhil Verma	17	20
5.	302104117006	Akhilesh Maurya	22	23
6.	302104117007	Ayushi Gupta	28	19
7.	302104117008	Ayushi Sharma	27	20
8.	302104117009	Barnamaye Jana	29	26
9.	302104117010	Bharti Athkari	27	24
10.	302104117011	Bhekh Lal Banjare	27	27
11.	302104117012	Bhupendra Giri Goswami	15	22
12.	302104117013	Chaitanya Jaiswal	27	26
13.	302104117014	Chanda Wadde	24	16
14.	302104117015	Chandresh	22	19
15.	302104117016	Chetna Birla	29	28
16.	302104117017	Dageshwar Sahu	27	23
17.	302104117018	David Jangde	24	16
18.	302104117019	Deepak Kumar Sahu	23	23
19.	302104117020	Dhanesh Kumar Sahu	22	21
20.	302104117021	Dharmendra Nishad	26	20

21.	302104117023	Dileshwar	26	20
22.	302104117024	Duleshwar Prasad Sahu	28	25
23.	302104117025	Gauri Shankar Yadav	27	25
24.	302104117026	Gautam Kumar	22	20
25.	302104117028	Gulshan Nishad	22	20
26.	302104117030	Harish Kumar Verma	19	19
27.	302104117032	Harsimran Kaur Kohli	28	28
28.	302104117033	Hemanshi Pal	22	22
29.	302104117034	Hemlata Jatwar	27	28
30.	302104117035	Himanshu	25	20
31.	302104117036	Himanshu Sahu	15	26
32.	302104117038	Hirendra Kumar	19	22
33.	302104117039	Homeshwar Lal Verma	15	23
34.	302104117040	Kamal Hasan Jangde	15	23
35.	302104117041	Khelsai	21	25
36.	302104117042	Khetrapal Ghritdode	24	28
37.	302104117043	Khushbu Chelak	28	27
38.	302104117044	Kshamanidhi Sahu	21	24
39.	302104117045	Lav Kumar Banjare	21	21
40.	302104117047	Madhu	12	27
41.	302104117048	Mahendra Kumar Sahu	20	28
42.	302104117051	Manish Kumar Dewangan	25	27
43.	302104117052	Mayank Garhewal	24	24
44.	302104117054	Md Aftab Quereshi	23	24
45.	302104117055	Milesh Kumar Chandrakar	18	20
46.	302104117057	Nageshwar Sahu	18	20

47.	302104117058	Narendra	26	23
48.	302104117061	Niharika Sahu	27	29
49.	302104117064	Omesh Vaishnav	22	25
50.	302104117065	Piyush Sahu	24	27
51.	302104117066	Pragya Singh	27	29
52.	302104117067	Pranish Sahu	19	25
53.	302104117069	Raghuveer Chandravanshi	27	23
54.	302104117070	Ramdev Sagar Dhruw	21	27
55.	302104117071	Rishabhdev Sen	21	25
56.	302104117073	Ruchi Gupta	27	22
57.	302104117074	Rupesh Kumar Sahu	20	24
58.	302104117075	Rupesh Kumar Sahu	21	20
59.	302104117076	Sachin Sahu	22	26
60.	302104117077	Sana Fatima	28	26
61.	302104117078	Sana Hasan	28	27
62.	302104117079	Sanjay Kumar Verma	17	25
63.	302104117081	Shashikala	26	25
64.	302104117082	Shivam Gupta	23	20
65.	302104117083	Shubham Kumar	27	25
66.	302104117084	Shubham Verma	17	21
67.	302104117085	Simran Jatwar	27	29
68.	302104117086	Smita Suthar	28	28
69.	302104117087	Somnath	20	18
70.	302104117088	Sourav Maity	23	19
71.	302104117089	Subhashini Markam	23	21
72.	302104117090	Sudha Jumani	25	23

73.	302104117091	Suraj Kumar Sinha	20	17
74.	302104117092	Suresh Kumar	21	20
75.	302104117093	Tekeshwar Prasad Sahu	24	24
76.	302104117094	Triloki	20	18
77.	302104117095	Trishala Singh	25	23
78.	302104117096	Upasna	21	23
79.	302104117097	Vinay Shankar Panday	20	17
80.	302104117098	Vinod Dewangan	28	29
81.	302104117099	Vinod Kumar	25	22
82.	302104117100	Vishal Kumar Dewangan	25	22
83.	302104117101	Yash Bhagwani	20	17
84.	302104118310	Manisha Dewangan	26	27
85.	302104118311	Pranjal Dixit	27	25
86.	302104118312	Uma Verma	28	25

Performance of the Students in End Semester Examination	Year : III
	Semester : V

END SEMESTER EXAMINATION

Sl. No.	Roll No.	Name of Students	Marks Obtained					
			Theory			Practical		
			Internal	University	Total	Internal	University	Total
	Roll No	Student Name	25	75	100	15	35	50
1.	302104117001	Abhishek Dewangan	22	38	60	12	28	40
2.	302104117002	Ajay Kumar	15	0	15	10	27	37
3.	302104117003	Ajit Verma	22	34	56	12	26	38
4.	302104117005	Akhil Verma	20	29	49	14	29	43
5.	302104117006	Akhilesh Maurya	21	61	82	15	31	46
6.	302104117007	Ayushi Gupta	22	59	81	15	31	46
7.	302104117008	Ayushi Sharma	22	53	75	15	31	46
8.	302104117009	Barnamaye Jana	24	67	91	15	31	46
9.	302104117010	Bharti Athkari	23	62	85	15	31	46
10.	302104117011	Bhekh Lal Banjare	24	54	78	15	22	37
11.	302104117012	Bhupendra Giri Goswami	20	31	51	9	37	46
12.	302104117013	Chaitanya Jaiswal	24	42	66	15	23	38
13.	302104117014	Chanda Wadde	20	45	65	10	27	37

14.	302104117015	Chandresh	20	41	61	13	33	46
15.	302104117016	Chetna Birla	25	58	83	15	26	41
16.	302104117017	Dageshwar Sahu	22	52	74	13	27	40
17.	302104117018	David Jangde	20	39	59	15	23	38
18.	302104117019	Deepak Kumar Sahu	22	39	61	14	22	36
19.	302104117020	Dhanesh Kumar Sahu	20	32	52	10	27	37
20.	302104117021	Dharmendra Nishad	22	40	62	14	26	40
21.	302104117023	Dileshwar	21	45	66	11	26	37
22.	302104117024	Duleshwar Prasad Sahu	23	52	75	13	27	40
23.	302104117025	Gauri Shankar Yadav	23	54	77	13	31	44
24.	302104117026	Gautam Kumar	21	58	79	13	27	40
25.	302104117028	Gulshan Nishad	21	41	62	13	26	39
26.	302104117030	Harish Kumar Verma	20	46	66	12	26	38
27.	302104117032	Harsimran Kaur Kohli	24	52	76	15	30	45
28.	302104117033	Hemanshi Pal	21	42	63	15	26	41
29.	302104117034	Hemlata Jatwar	24	52	76	15	31	46
30.	302104117035	Himanshu	22	51	73	15	29	44
31.	302104117036	Himanshu Sahu	21	56	77	15	27	42
32.	302104117038	Hirendra	20	40	60	13	26	39

		Kumar						
33.	302104117039	Homeshwar Lal Verma	20	45	65	12	25	37
34.	302104117040	Kamal Hasan Jangde	20	34	54	13	25	38
35.	302104117041	Khelsai	22	56	78	13	23	36
36.	302104117042	Khetrapal Ghritdode	22	53	75	14	24	38
37.	302104117043	Khushbu Chelak	24	61	85	15	28	43
38.	302104117044	Kshamanidhi Sahu	22	38	60	15	26	41
39.	302104117045	Lav Kumar Banjare	21	29	50	14	26	40
40.	302104117047	Madhu	20	49	69	13	25	38
41.	302104117048	Mahendra Kumar Sahu	22	64	86	14	29	43
42.	302104117051	Manish Kumar Dewangan	22	56	78	10	27	37
43.	302104117052	Mayank Garhewal	22	63	85	15	24	39
44.	302104117054	Md Aftab Quereshi	21	45	66	11	25	36
45.	302104117055	Milesh Kumar Chandrakar	19	25	44	10	26	36
46.	302104117057	Nageshwar Sahu	20	35	55	13	26	39
47.	302104117058	Narendra	22	48	70	9	28	37
48.	302104117061	Niharika Sahu	24	62	86	15	30	45
49.	302104117064	Omesh Vaishnav	22	55	77	15	29	44

50.	302104117065	Piyush Sahu	23	63	86	15	30	45
51.	302104117066	Pragya Singh	24	23	47	14	30	44
52.	302104117067	Pranish Sahu	20	53	73	13	26	39
53.	302104117069	Raghuveer Chandravanshi	22	47	69	13	25	38
54.	302104117070	Ramdev Sagar Dhruw	21	40	61	13	23	36
55.	302104117071	Rishabhdev Sen	21	53	74	13	25	38
56.	302104117073	Ruchi Gupta	23	56	79	15	26	41
57.	302104117074	Rupesh Kumar Sahu	20	49	69	14	26	40
58.	302104117075	Rupesh Kumar Sahu	20	37	57	14	26	40
59.	302104117076	Sachin Sahu	21	64	85	13	26	39
60.	302104117077	Sana Fatima	24	47	71	15	31	46
61.	302104117078	Sana Hasan	24	42	66	15	31	46
62.	302104117079	Sanjay Kumar Verma	20	60	80	13	25	38
63.	302104117081	Shashikala	22	43	65	13	24	37
64.	302104117082	Shivam Gupta	21	41	62	15	25	40
65.	302104117083	Shubham Kumar	22	39	61	15	25	40
66.	302104117084	Shubham Verma	20	48	68	15	24	39
67.	302104117085	Simran Jatwar	24	50	74	15	26	41
68.	302104117086	Smita Suthar	24	28	52	15	30	45
69.	302104117087	Somnath	20	36	56	15	26	41
70.	302104117088	Sourav Maity	20	45	65	12	25	37

71.	302104117089	Subhashini Markam	20	34	54	13	25	38
72.	302104117090	Sudha Jumani	22	56	78	15	27	42
73.	302104117091	Suraj Kumar Sinha	19	40	59	12	26	38
74.	302104117092	Suresh Kumar	20	41	61	13	26	39
75.	302104117093	Tekeshwar Prasad Sahu	21	29	50	11	26	37
76.	302104117094	Triloki	19	48	68	12	27	39
77.	302104117095	Trishala Singh	22	49	71	14	26	40
78.	302104117096	Upasna	21	31	52	15	25	40
79.	302104117097	Vinay Shankar Panday	19	54	73	13	25	38
80.	302104117098	Vinod Dewangan	24	34	58	15	31	46
81.	302104117099	Vinod Kumar	21	39	60	15	25	40
82.	302104117100	Vishal Kumar Dewangan	21	50	71	11	26	37
83.	302104117101	Yash Bhagwani	19	57	76	9	26	35
84.	302104118310	Manisha Dewangan	23	49	72	14	31	45
85.	302104118311	Pranjal Dixit	23	38	61	15	23	38
86.	302104118312	Uma Verma	24	59	83	15	27	42

Result Analysis	Year : III
	Semester : V

Analysis of University End Semester Exam (Theory)

No. of Students appeared in the examination	No. of students scoring more than 60% of marks	Percentage of students scoring more than 60% of marks	Attainment Level (Max 3.0)	As per NBA 80% value of University End Semester Exam
86	69	80	3	2.4

Analysis of Internal Exam (Theory)

No. of Students appeared in the examination	No. of students scoring more than 60% of marks	Percentage of students scoring more than 60% of marks	Attainment Level (Max 3.0)	As per NBA 20% value of Internal Level
86	86	100	3	0.6

Analysis of University End Semester Exam (Practical)

No. of Students appeared in the examination	No. of students scoring more than 60% of marks	Percentage of students scoring more than 60% of marks	Attainment Level (Max 3.0)	As per NBA 80% value of University Level
86	86	100	3	2.4

Analysis of Internal Marks (Practical)

No. of Students appeared in the examination	No. of students scoring more than 60% of marks	Percentage of students scoring more than 60% of marks	Attainment Level (Max 3.0)	As per NBA, 20% value of Internal Level
86	86	100	3	0.6

Rule for Attainment Level

Attainment Level 1: 60% Students scoring more than set attainment level (60% Marks) in the final examination is considered to be attainment level of "1".

Attainment Level 2: 70% Students scoring more than set attainment level (60% Marks) in the final examination is considered to be attainment level of "2".

Attainment Level 3: 80% Students scoring more than set attainment level (60% Marks) in the final examination is considered to be attainment level of "3".

Course Outcome Attainment	Year : III
	Semester : V

Course Outcome Attainment

The Attainment of Course Outcome of Formulative Pharmacy are as follows-

% Attainment = Achieved/Target

Achieved = (Value 80% of University Exam + Value 20% of Internal Exam of Theory) + (Value 80% of University Exam + Value 20% of Internal Level of Practical)

Achieved = (2.4+0.6+2.4+0.6)

= 6.0

For Max Scale 3.0 = 6.0/2

= 3

So, the attainment level for the particular subject is **3.0**, thus target achieved then the course outcome is attained for the Formulative Pharmacy.

% of the Course Outcome Attainment of Course/Subject

= (Obtained attainment level/Maximum Attainment level) X 100
= (3.00/3.0) X 100
= 100%

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