

Vidarbha Youth Welfare Society's
INSTITUTE OF PHARMACEUTICAL EDUCATION AND RESEARCH
Borgaon (Meghe), Wardha (M.S.)

11. Scheme for awarding internal assessment continuous mode marks




(Dr. R. O. Ganjivale)
Principal
Institute of Pharmaceutical Education & Research
Borgaon (Meghe), Wardha

Vidarbha Youth Welfare Society's
INSTITUTE OF PHARMACEUTICAL EDUCATION AND RESEARCH
Borgaon (Meghe), Wardha (M.S.)

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Scheme for awarding internal assessment continuous mode marks

11.2. Internal assessment: Continuous mode

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

Table-XI: Scheme for awarding internal assessment: Continuous mode

Theory		
Criteria	Maximum Marks	
Attendance (Refer Table – XII)	4	2
Academic activities (Average of any 3 activities e.g. quiz, assignment, open book test, field work, group discussion and seminar)	3	1.5
Student – Teacher interaction	3	1.5
Total	10	5
Practical		
Attendance (Refer Table – XII)	2	
Based on Practical Records, Regular viva voce, etc.	3	
Total	5	

Table- XII: Guidelines for the allotment of marks for attendance

Percentage of Attendance	Theory	Practical
95 – 100	4	2
90 – 94	3	1.5
85 – 89	2	1
80 – 84	1	0.5
Less than 80	0	0



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11.1 Internal Examination Schedule sample format

Institute of Pharmaceutical Education and Research, Wardha
CONTINUOUS INTERNAL EVALUATION SCHEDULE-2023
B.Pharm. IV Sem VII, Subject: Novel Drug Delivery System

Internal Evaluation Parameter (2023-2024) B.Pharm IV Sem VII	Date as per Continuous Internal Evaluation Schedule	Date of Implementation
Surprise Test I	10/07/2023	17/07/23
Display of Surprise Test I Marks	11/07/2023	19/07/23
Assignment Test I	24/7/2023	31/07/23
Display of Assignment Test I Marks	25/7/2023	03/08/23
CLASS TEST-I	26/7/2023	01/08/23
Display of CAT-I Marks	28/7/2023	07/08/23
FIRST SESSIONAL EXAMINATION-T & P	31/07/2023 to 05/08/2023	11/08/23
Display of First Sessional Marks	04/8/2023	14/08/23
Surprise Test II	04/09/2023	13/09/23
Display of Surprise test II Marks	06/09/2023	15/09/23
Assignment Test II	18/09/2023	09/10/23
Display of Assignment Test I Marks	20/09/2023	11/10/23.
CLASS TEST-II	20/09/2023	04/10/23
Display of CAT-II Marks	22/09/2023	06/10/23
SECOND SESSIONAL EXAMINATION-T & P	25/09/2023 to 30/09/2023	03/11/23
Display of Sessional Sessional Marks	03/10/2023	5/11/23



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11.2 Continuous Internal Assessment

INSTITUTE OF PHARMACEUTICAL EDUCATION AND RESEARCH,
Borgaon (Meghe) Wardha
CONTINUOUS MODE

(% Attendance & Marks of Theory & Practical, Record Marks, Student Teacher Interaction (STI) & Assignment)

Subject :- Novel Drug Delivery System

B.PHARM SEM VII 2023-24

Roll No.	Name of Students			Theory				
				% Atten	Marks Out of 4	STI Out of 3	Assign- Out of 3	Total Out of 10
1	Ku. A. M.	Kolhe	87.04	2	3	2	7	
2	Ku. A. N.	Shaikh	92.59	3	3	2	8	
3	Ku. A. P.	Gote	98.15	4	3	1.5	8.5	
4	Ku. A. S.	Talware	90.74	3	3	2	8	
5	Ku. A. S.	Tinghase	88.89	2	3	2	7	
6	Ku. B. P.	Thakare	87.04	2	3	1.5	6.5	
7	Ku. C. R.	Shende	85.19	2	3	2	7	
8	Ku. D. N.	Mandaokar	70.37	0	2.5	2	4.5	
9	Ku. E. U.	Kotharkar	96.30	4	3	2	9	
10	Ku. G. S.	Kawle	0.00	0	0	0	0	
11	Ku. I. S.	Borkar	79.63	0	2.5	2	4.5	
12	Ku. J. S.	Satone	0.00	0	0	0	0	
13	Ku. K. D.	Bele	90.74	3	3	2	8	
14	Ku. K. R.	Raut	94.44	3	3	2	8	
15	Ku. K. S.	Thakare	96.30	4	3	2	9	
16	Ku. L. S.	Mahajan	96.30	4	3	1.5	8.5	
17	Ku. M. G.	Sayam	92.59	3	3	2	8	
18	Ku. M. N.	Hatwar	55.56	0	1.5	2	3.5	
19	Ku. M. R.	Verma	90.74	3	3	1.5	7.5	
20	Ku. P. R.	Umate	92.59	3	3	1.5	7.5	
21	Ku. P. V.	Lanjekar	75.93	0	2.5	1.5	4	
22	Ku. R. K.	Umathe	96.30	4	3	2	9	
23	Ku. R. M.	Shidodkar	96.30	4	3	2	9	
24	Ku. R. P.	Deshpande	33.33	0	0	0	0	
25	Ku. R. S.	Khurpade	81.48	1	3	2	6	
26	Ku. R. S.	Raut	66.67	0	2	1.5	3.5	
27	Ku. R. V.	Bhale	94.44	3	3	2	8	
28	Ku. S. M.	Yadav	94.44	3	3	1.5	7.5	
29	Ku. S. N.	Deshmukh	87.04	2	3	1.5	6.5	
30	Ku. S. P.	Tapre	64.81	0	2	1.5	3.5	
31	Ku. S. R.	Chahande	92.59	3	3	2	8	
32	Ku. S. R.	Thakare	75.93	0	2.5	2	4.5	



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35	Ku. S. R.	Trwari	75.91	0	2.5	2	4.5
36	Ku. S. S.	Ahirrao	92.59	3	3	2	8
37	Ku. S. S.	Misallur	85.13	2	3	2	7
38	Ku. S. S.	Nimbalkar	87.04	2	3	2	7
39	Ku. S. L.	Yedlawar	77.78	0	2.5	2	4.5
40	Ku. S. V.	Bhosar	70.37	0	2.5	2	4.5
41	Ku. S. V.	Dhok	87.04	2	3	2	7
42	Ku. Sakshi N	Raut	94.44	3	3	2	8
43	Ku. Shreya S	Raut	81.48	1	3	2	6
44	Ku. T. R.	Dhange	90.74	3	3	1.5	7.5
45	Ku. T. R.	Hukum	94.44	3	3	2	8
46	Ku. T. U.	Moon	83.33	1	3	2	6
47	Ku. U. S.	Gawande	27.78	0	0	0	0
48	Ku. V. A.	Kalhekar	77.78	0	2.5	2	4.5
49	Ku. V. D.	Mee	90.74	1	3	2	6
50	Ku. V. D.	Shrivastava	96.30	4	3	1.5	8.5
51	Ku. V. N.	Deshmukh	94.44	3	3	2	8
52	Ku. V. R.	Sandur	87.04	2	3	2	7
53	Ku. Y. D.	Kade	98.13	4	3	2.5	9.5
54	Mr. A. C.	Darda	82.48	1	3	1.5	5.5
55	Mr. A. K.	Karhakar	72.22	0	2.5	1.5	4
56	Mr. A. N.	Dhule	70.37	0	2.5	1.5	4
57	Mr. G. M.	Sakshidra	66.67	0	2	2	4
58	Mr. H. C.	Borale	81.48	1	3	1.5	5.5
59	Mr. J. S.	Kadu	53.70	0	1.5	1.5	3
60	Mr. M. A.	Hydri	70.37	0	2.5	1.5	4
61	Mr. N. O.	Dhanshane	77.78	0	2.5	1.5	4
62	Mr. N. S.	Chhajed	81.48	1	3	2	6
63	Mr. O. P.	Patil	50.00	0	1.5	1	2.5
64	Mr. P. M.	Zade	48.89	2	3	1.5	6.5
65	Mr. P. M.	Wadhe	79.63	0	2.5	1.5	4
66	Mr. P. S.	Wamre	45.19	2	3	1.5	6.5
67	Mr. P. S.	Bhosale	85.19	2	3	1.5	6.5
68	Mr. R. G.	Prabhakar	88.89	2	3	2	7
69	Mr. R. G.	Manar	48.15	0	1	1.5	2.5
70	Mr. R. S.	Dhansale	29.63	0	0	0	0
71	Mr. R. S.	Jawade	82.48	1	3	1.5	5.5
72	Mr. R. S.	Falmali	79.63	0	1	2	3
73	Mr. S. H.	Kerkar	58.26	0	1.5	1.5	3
74	Mr. S. C.	Dhange	90.74	3	3	1.5	7.5
75	Mr. S. D.	Gawali	62.96	0	2	1.5	3.5
76	Mr. S. H.	Bokade	55.56	0	1.5	1	2.5
77	Mr. S. R.	Khade	63.3333	1	3	1.5	5.5
78	Mr. T. M.	Karhakar	79.82963	0	2.5	1.5	4
79	Mr. Y. M.	Kondwar	70.37037	0	2.5	1.5	4

Timing

Signature

10-10

4

Name

10-10

3

Date

10-10

2

10-10

1

10-10-10

0



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ACADEMIC ACTIVITIES-NOVEL DRUG DELIVERY SYSTEM

B. PHARM, SEM VII STUDENTS-2023

S.No.	Name of Students	ACADEMIC ACTIVITIES						MEAN		
		Surprise test		Class test		Assignment		20.00	2.4	2.5
		1	2	1	2	1	2			
		10/8/2022	17/10/2022	12/9/2022	23/11/2021	13/9/2022	17/11/2021			
1	Ku.A. A. Kothiwan	14	18	14	13.5	16.5	20	16.00	2.4	2.5
2	Ku.A. A. Lichade	16	18	16	10.5	18	20	18.50	2.78	3
3	Ku.A. C. Dongre	12	14	12	9	14	20	14.50	2.18	2.5
4	Ku.A. M. Sheikh	12	12	14	8	12	6	16.50	2.48	2.5
5	Ku.A. P. Chaudhari		16	14	7	16	Not Solved	15.50	2.33	2.5
6	Ku.A. P. Sute	14	16	16	16	16	20	16.40	2.46	2.5
7	Ku.A. R. Ghuge	18	14	12	11	14	20	15.00	2.25	2.5
8	Ku.A. S. Pandey	20	18	16	16	20	20	17.00	2.55	2.5
9	Ku. AparnaShree	14	18	16	14	18	20	17.00	2.55	2.5
10	Ku.B. S. Ghodmare	12	16	16	13	20	20	15.50	2.33	2.5
11	Ku.B. S. Gupta	12	18	14		12	18	16.50	2.48	2.5
12	Ku.D. U. Vaitage	16	16	10	9	16	18	15.00	2.25	2.5
13	Ku.G. D. Deshmukh	8	6	16	9	10	10	16.50	2.48	2.5
14	Ku.G. R. Wadkar	18	14	12	12	14	20	17.00	2.55	2.5
15	Ku.G. V. Ingole	20	16	16	11	14	18	16.00	2.4	2.5
16	Ku.H. Y. Sheikh	20	18	16	10	20	20	17.00	2.55	2.5
17	Ku.K. C. Nannaware	18	18	16	10	18	20	16.00	2.4	2.5
18	Ku.K. V. Patil		18	16	13		16	16.40	2.46	2.5
19	Ku.M. M. Biswas	14	14	12	5.5	16	20	13.50	2.03	2
20	Ku.M. N. Dahake	18	12	12	10	12	20	17.50	2.64	3
21	Ku.M. N. Sahu	12	16	14	10	20	18	16.00	2.4	2.5
22	Ku.M. V. Waskar	12	16	14		8	18	16.00	2.4	2.5
23	Ku.N. P. Uike	16	16	12	7	16	18	17.00	2.55	2.5
24	Ku.N. S. Bhojar	16	16	16	10.5	16	20	16.00	2.4	2.5
25	Ku.P. J. Lunge	12	16	16		12	16	16.50	2.48	2.5
26	Ku.P. S. Bedarkar	12	16	16		16	20	17.00	2.55	2.5



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27	Ku.P. S. Rangire	16	16	16	11	18	20	17.60	2.64	3
28	Ku.P. V. Ikhar	12	16		8.5	16	18	13.50	2.03	2
29	Ku.R. V. Purnekar	16	16	14	8.5	14	20	18.50	2.78	3
30	Ku.R. K. Saiyad	14	16	16	14	18	16	13.50	2.03	2
31	Ku.R. M. Telang	16	14		10	16	16	18.00	2.7	3
32	Ku.R. R. Gadekar	14	18	12	12	20	20	16.00	2.4	2.5
33	Ku.R. R. Sangole		14	12	6	12	20	13.50	2.03	2
34	Ku.S. A. Itekar	10	18	16	8	18	20	17.00	2.55	2.5
35	Ku.S. D. Lidbe	14	10	14	10		12	15.50	2.33	2.5
36	Ku.S. G. Gadekar	16	18	14	13	20	20	16.00	2.4	2.5
37	Ku.S. G. Maldhure	8	14	12	12	20	20	15.00	2.25	2.5
38	Ku.S. M. Chandore	16	16	16	11	14	20	18.50	2.78	3
39	Ku.S. M. Ghode	16	18	12	12	14	20	16.50	2.48	2.5
40	Ku.S. N. Sarode	14	20	16	13	16	16	15.33	2.3	2.5
41	Ku.S. P. Polshettiwar	18	18	16	15	18	20	17.33	2.6	3
42	Ku.S. S. Zore	14	18	16	13	20	16	18.00	2.7	3
43	Ku.S. U. Verma	12	18	14	9	8	18	18.00	2.7	3
44	Ku.T. S. Tonpe	16	16	12	11	12	20	19.33	2.9	3
45	Ku.T. V. Durge	16	16	16	13	16	20	16.67	2.5	2.5
46	Ku.V. D. Madve	14	16	14	13	20	20	15.00	2.25	2.5
47	Ku.V. G. Ahuja	16	20	14	9	10	18	17.33	2.6	3
48	Ku.V. P. Mate	10	16	16	10	10	18	16.67	2.5	2.5
49	Ku.V. R. Talwekar	20	6	16	9	12	18	17.33	2.6	3
50	Ku.V. S. Gharat	18	18	16	11	18	20	17.50	2.63	3
51	Ku.V. S. Himane	12	10	10	10	12	12	12.67	1.9	2
52	Ku.V. S. Mhaske	18	18	14	13		20	17.33	2.6	3
53	Mr.A. A. Doshi	12	18	18	8	18	20	16.67	2.5	2.5
54	Mr.A. F. Pathan		14	16	11	18	20	18.00	2.7	3
55	Mr.A. M. Lode	12	16	16	11	18	18	15.33	2.3	2.5
56	Mr.A. S. Kambale	16	20	16	10	14	20	16.67	2.5	2.5
57	Mr.A. U. Nagtode	12	18	16		16	20	15.33	2.3	2.5
58	Mr.B. R. More	12	14	16	10	20	16	17.33	2.6	3
59	Mr.D. S. Borkar	14	18	16	8	18	14	16.67	2.5	2.5
60	Mr.G. G. Dige	12	14	16	13	20	20	16.67	2.5	2.5
61	Mr.G. M. Sable	14	18	14	10	20	Not	16.00	2.4	2.5



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							Solved			
62	Mr.K. N. Sathe	14	18	16	11	18	20	17.00	2.55	2.5
63	Mr.M. A. Gede	14	18	16	13	18	16	15.33	2.3	2.5
64	Mr.M. P. Katwe	12	18	16	8	18	12	16.50	2.48	2.5
65	Mr.M. P. Rathod	12	14	10	15	18	18	16.00	2.4	2.5
66	Mr.O. I. Chikankar	14	18	16	9	20	Not Solved	16.00	2.4	2.5
67	Mr.P. M. Bomkantiwar	14	18	16	10	18	20	18.00	2.7	3
68	Mr.P. R. Rawal	14	16	16	14	20	20	15.33	2.3	2.5
69	Mr.P. Y. Jachak	16	18	14	9		20	18.00	2.7	3
70	Mr.S. D. Fating	10	16	14	9	16	12	17.33	2.6	3
71	Mr.S. J. Thakare	12	18	14			20	16.00	2.4	2.5
72	Mr.S. R. Bomkantiwar	10	16	14	13	16	14	18.00	2.7	3
73	Mr.T. A. Khopde	14	18	12	9	20	16	14.67	2.2	2.5
74	Mr.V. S.Admane	14	18	10	12	20	14	14.00	2.1	2.5



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3/18/24, 11:19 AM

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Institute of Pharmaceutical Education and Research, Wardha

B. Pharmacy [2023-24]

FIRST SESSIONAL EXAMINATION 2023-2024

Subject : Novel Drug Delivery System - Theory

Year : Final Year - Semester VII **Marks :** 30 **Date :** 11 August, 2023 **Duration :** 60 Minutes

Instructions : 1) Solve all questions.

Question	Marks	Course Outcome	Blooms Level	Performance Indicator
Que. No. 1 Attempt following questions				
a) What do you mean by polymers?	2.00	CO2	Remember	
b) Differentiate between conventional and controlled drug delivery systems.	2.00	CO1	Analyze	
c) How does non-biodegradable passive implant govern the release of drug?	2.00	CO3,CO5	Create,Apply,Remember	
d) "Bioadhesive polymers led to improvement in oral drug delivery." Justify	2.00	CO3,CO5	Create,Evaluate	
e) Write on your own about basic parameters to be considered for design of new microcapsule based drug product.	2.00	CO6	Create	
Que. No. 2 Solve any ONE form the following.				
a) Illustrate diffusion controlled drug delivery system. Discuss the biological properties of drugs relevant to controlled release formulation.	10.00	CO3,CO4,CO5	Create,Evaluate,Understand	
b) Explain the different theories of mucoadhesion.	10.00	CO3	Evaluate,Understand	
Que. No. 3 Write Short note (Any Two)				
a) Polymers properties explanation	5.00	CO2	Create,Apply	
b) Application of microcapsules explanation	5.00	CO3,CO5	Creates,Apply	
c) Coacervation phase separation technique discussion	5.00	CO1,CO5	Create,Understand	


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Institute of Pharmaceutical Education and Research, Wardha
 B. Pharmacy [2023-24]
SECOND SESSIONAL EXAMINATION 2023- 2024

Subject : Novel Drug Delivery System - Theory
Year : Final Year - Semester VII Marks : 30 Date : 3 November, 2023 Duration : 60 Minutes
Instructions: 1) Solve all questions.

Question	Marks	Course Outcome	Blooms Level	Performance Indicator
Que. No. 1 Attempt following questions:				
a) Enlist the factors skin permeation of drugs?	2.00	CO3	Remember	
b) What is pulmonary drug delivery system?	2.00	CO3	Remember	
c) Differentiate between Medicated and Nonmedicated IUD.	2.00	CO4,CO5,CO6	Analyze	
d) "Floating drug delivery system overcome the limitations of oral controlled drug delivery systems." Justify.	2.00	CO4,CO5,CO6	Evaluate	
e) Write on your own about basic parameters to be considered for design of new nanoparticle based targeted drug product.	2.00	CO3,CO4,CO5,CO6	Create	
Que. No. 2 Solve any ONE form the following.				
a. Illustrate passive drug targeting. Discuss the nanoparticles as targeted drug delivery system.	10.00	CO3,CO4,CO5,CO6	Create,Evaluate,Understand	
b. Mention the different types of floating drug delivery systems. Explain them in details.	10.00	CO3,CO4,CO5	Evaluate,Understand	
Que. No. 3 Write Short note (Any Two)				
a) Explanation of Basic components of Transdermal TDDS	5.00	CO3,CO4,CO5	Create,Apply	
b) Ocusent's explanation	5.00	CO3,CO4,CO6	Create,Apply	
c) Pressurized MDI explanation.	5.00	CO3,CO4,CO5,CO6	Create,Apply	

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B. Pharmacy [2023-24]

CLASS TEST I

Subject : Novel Drug Delivery System - Theory

Year : Final Year - Semester VII **Marks :** 20 **Date :** 3 September, 2023 **Duration :** 60 Minutes

Attempt all questions

Question	Marks	Course Outcome	Blooms Level	Performance Indicator
Q.1 Write short notes on any four of the followings.				
a) Ion exchange based controlled drug delivery system explanation	5.00	CO1	Create,Apply	
b) Properties of polymer discussion	5.00	CO2	Create,Understand	
c) Air suspension method in microencapsule development	5.00	CO3	Create,Apply	
d) Illustrate Principle of bioadhesion	5.00	CO1,CO2,CO3	Evaluate,Understand	
e) Osmotic pump construction	5.00	CO3,CO4,CO5	Creates,Apply	




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Rollno. :- 05

Subject :- Novel Drug Delivery System

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Date 2/1

Class Test - 7.

• Any (4)

Q1) Ion exchange based control drug delivery system.

Q2) Properties of polymer

Q3) Air suspension method in microencapsulation

Q4) Principle of bioadhesion

Q5) Osmotic pump

→ Answers :-

Q1) The system is designed to provide the controlled drug release of an ionic or ionizable drug. It is prepared by first adsorbing an ionized drug onto the ion exchange resin granules such as β -codeine base with Amberlite. & then after filtration from the alcoholic medium, coating the drug resin complex granule with a water permeable polymer, eg. copolymers of polyacrylic & methacrylic ester. & then spray drying the coated granules to produce polymer coated drug. The drug is then diffuse out of the resin.

$\text{Resin}^+ - \text{drug}^- + \text{X-resin}^+ - \text{X}^- + \text{drug}^-$
where, X- are ions in the GI tract.

The rate of diffusion control by the area of diffusion & path length & rigidity of resin. Thus, drug release depends on the ionic environment & the properties of resin. This method is helpful for those drug which are highly susceptible to degradation by enzymatic processes since it offers a protective mechanism

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• If the structure is linear, polymer chains can pack together in regular array. Ex - Polypolypropylene chains fit together in a way that intermolecular attraction stabilize the chains into a regular lattice or crystalline state & increase temperature.

• Amorphous structure is formed due to either rapid cooling of a polymer melt in which crystallization is prevented by quenching or due to the lack of structural regularity in the polymer structure

(b) Thermal Transitions:-

In this polymers can occur in different orders. In other words, the volume of a polymer can change with temperature as a first- or second order transition.

(c) Glass Transition Temperature:-

T_g is an expression of molecular motion, which is dependent on many factors. Therefore, the T_g is not an absolute property of a material and is influenced by the factors affecting the movement of polymer chains.

(d) Molecular weight and polymer Properties:-

The properties of a given polymer generally increase with an increase in molecular weight. Polymer melts & polymer solⁿ are handled with more difficulty as their molecular weight increases.

(e) Viscoelastic Properties

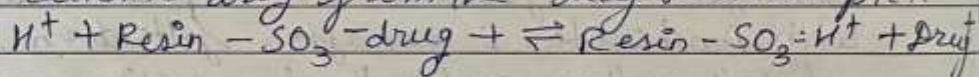
(f) Mechanical Properties

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by temporarily altering the substrate. The release rate is proportional to the concentration of the ions present in the vicinity of administration site. So variable diet, water intake and intestinal contents affects the release rate of drug. There are mainly two types of resin. i.e. cation exchange & anion exchange resin.

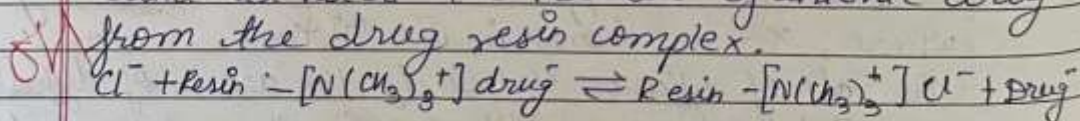
(a) Cationic drugs:-

A cationic drug forms a complex with an anionic ion exchange resin. eg. a resin with a SO_3^- group. In the GI tract Hydronium ion (H^+) in the gastrointestinal fluid penetrates the system and activates the release of cationic drug from the drug resin complex



(b) Anionic drug:-

An anionic drug forms a complex with a cationic ion exchange resin, eg. a resin with a $[\text{N}(\text{CH}_3)_3^+]$ group. In the GI tract the chloride ion (Cl^-) in the gastrointestinal fluid penetrates the system and activates the release of anionic drug from the drug resin complex.



(Q2) Properties of Polymers:-

(a) Crystalline & Amorphous Polymers

• Polymers display various thermal, physical & mechanical properties.

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Q5) ~~Osmotic~~ Osmotic Pump:-

Process of movement of the solvent from the lower concentration of solution to the higher concentration of the solution through the semi permeable membrane.

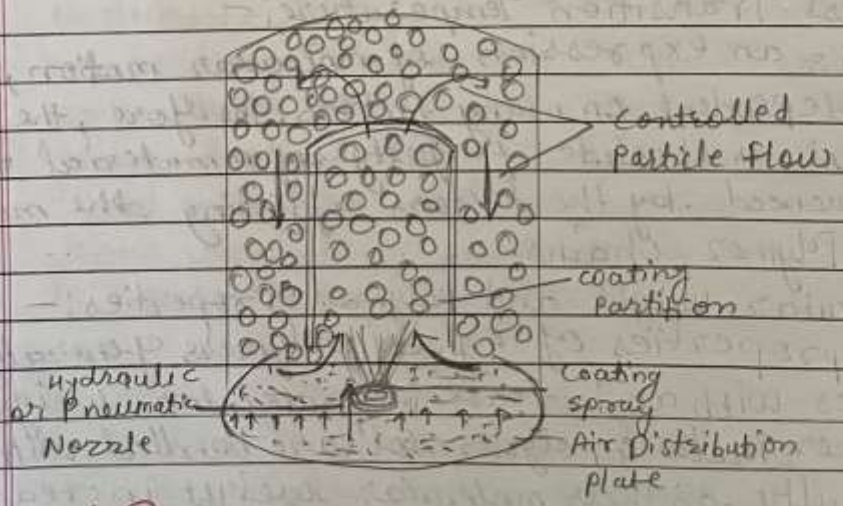
• Basic component of Osmotic system:-

- ① Drug
- ② Osmotic agents
- ③ Semipermeable membrane.
- ④ Wicking agent
- ⑤ Pore forming agent
- ⑥ Coating agent

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Q3) Air suspension

Air suspension coating gives improved control & flexibility compared to pan coating. In this process the particulate core material, which is solid, is dispersed into the supporting air stream & these suspended particles are coated with polymers in a volatile solvent leaving a very thin layer of polymer on them. This process of air-suspension is repeated several hundred times until the required parameter such as coating thickness, etc is achieved. The air stream which supports the particle also helps to dry them, and the rate of drying is directly proportional to the temperature of the air stream which can be modified to further affect the properties of the coating.



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