

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: M.PHARM
BRANCH: PHARMACEUTICS**

**SEMESTER : I
SESSION : MO/19**

SUBJECT: MPH103T MODERN PHARMACEUTICS

TIME: 3:00 HOURS

FULL MARKS: 75

INSTRUCTIONS:

1. The question paper contains 7 questions each of 15 marks and total 105 marks.
 2. Candidates may attempt any 5 questions maximum of 75 marks.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) Summarize the role of “Drug-Excipient interaction/compatibility studies” in formulation. [7]
 Q.1(b) Explain the role of “Particle interaction and behavior” towards suspension stability. [8]
- Q.2(a) Discuss the mechanism of dissolution in detail. [7]
 Q.2(b) Enlisting the importance of in vitro dissolution studies, discuss the various release kinetics being used. [8]
- Q.3(a) Explain in detail about the events during Compression and Heckel’s Plot. [7]
 Q.3(b) Explain the possible mechanism for reduction of bulk volume of a bed of powder when subjected to external force. [8]
- Q.4(a) Explain similarity factor and dissimilarity factor with their importance. [7]
 Q.4(b) “Type and degree of crystallinity influences consolidation”- Explain. [8]
- Q.5(a) Enlisting the needs of cGMP, discuss the need and importance of Total Quality Management in drug industry. [7]
 Q.5(b) Highlighting the need of validation in drug formulation industry, explain its various types. [8]
- Q.6(a) During optimization using 2³ factorial experiment following result was obtained: [7]

Formulation	Coded factor Level			Response, Y
	X1	X2	X3	
1	-1	-1	-1	5.5
2	+1	-1	-1	9.5
3	-1	+1	-1	11.5
4	+1	+1	-1	14.1
5	-1	-1	+1	16.2
6	+1	-1	+1	14.9
7	-1	+1	+1	17.8
8	+1	+1	+1	10.8

- Construct response equation relating independent and dependent variables aof the equation form of $Y=B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_{123}X_1X_2X_3$ (Note: ignore two factor interaction in coefficient calculation)
- Q.6(b) Explaining various advantages of coding the actual levels of independent variables during optimization devise suitable method of coding. [8]
- Q.7(a) Devise suitable steps while performing sequential optimization technique. [7]
 Q.7(b) The transformed proportion along with the response outcome during three-component is given below [8]

Formulation	Coded factor Level			Response, Y
	A	B	C	
1	1.0	0.0	0.0	11.5
2	0.0	1.0	0.0	14.8
3	0.0	0.0	1.0	19.9
4	0.5	0.5	0.0	14.1
5	0.5	0.0	0.5	19.0
6	0.0	0.5	0.5	17.2
7	0.33	0.33	0.33	12.9

Construct response equation correlating dependent and independent variables