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

CLASS: MPHARM **SEMESTER: I**
BRANCH: PHARMACY **SESSION: MO2024**

SUBJECT: MPH103T MODERN PHARMACEUTICS

TIME: 3.00 Hours **FULL MARK: 75**

INSTRUCTIONS:

1. The missing data, if any, may be assumed suitably.
2. Before attempting the question paper, be sure that you have got the correct question paper.
3. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
5. Answer any five questions.

1a. Prepare a design matrix for Box-Behnken experimental design considering number of center points are five, when the number of control variables are three and each control variables have three different levels. [7]

1b. Calculate the mean dissolution time (MDT) of the below-mentioned dissolution profile of a tablet containing 600 mg of drug. [8]

Time (hour)	Cumulative percent drug release
0	0
1	28
2	36
3	47
4	55
5	65
6	72
7	83
8	94
12	100

2a. Describe second order polynomial model and find out the minimum number of experimental runs required to determine all the unknown coefficients. [7]

2b. Write a short note on similarity factor and dissimilarity factor. [8]

3a. Describe Weibull model of drug release and discuss its advantages. [7]

3b. Create a design matrix for the Plackett–Burman Design when the number of control variables are 11. [8]

4a. Write a short note on dissolution rate kinetic models. [7]

4b. Discuss any two methods for determining drug-excipient compatibility using suitable examples to illustrate each. [8]

5a. Define compressibility, compatibility, and tabletability, and explain each with the help of appropriate diagrams. [7]

5b. Derive the Heckel equation to analyse the volume reduction mechanism during tablet compression. [8]

6a. Write about the various theories of pharmaceutical dispersion. [7]

6b. Discuss the preparation and evaluation of SMEDDS. [8]

7a. Explain the manufacturing and evaluation processes of parenteral products. [7]

7b. Discuss Total Quality Management. [8]

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