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

CLASS:M.PHARM **SEMESTER: I**
BRANCH: PHARMACY **SESSION:MO2022**

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. Define compressibility, compactability and tabletability with suitable diagram. [7]
1b. Deduce the Heckel equation to determine the volume reduction mechanism during compression. [8]

2a. A prescription for a liquid aspirin preparation is call for, it is to contain 325 mg/mL aspirin. The solubility of aspirin at 25°C is 0.33 g/100 mL; therefore, the preparation will definitely be suspension. The first order rate constant for aspirin degradation in this solution is 4.5×10^{-6} sec^{-1}. Calculate the rate constant which is followed by suspension. Determine the shelf-life of the product. [7]
2b. Write down the formula to calculate the following dissolution parameters: [8]
Dissolution efficiency, Similarity factor and mean dissolution time

3a. Write a short note on ideal solubility. [7]
3b. Write down the steps to be followed for conducting t-test. Write the different equation to calculate the t value. [8]

4a. Elaborate on the purpose of experimental design in pharmaceutical formulation. [7]
4b. Why Prediction outside of the bounds of the independent variables are unreliable? [8]

5a. Devise a method to transform actual values of independent variables in its coded form. [7]
5b. Explain following terms in pharmaceutical optimization: [8]
(a) Quantitative factors
(b) Levels
(c) Runs
(d) Coded variables

6a. Illustrate and discuss electrical double layer considering positive potential determining ions adsorbed on the surface of dispersed particles. [7]
6b. Differentiate between following terms [8]
(a) Prospective validation
(b) Concurrent validation

7a. Apply the concept of DLVO theory to prepare a stable colloidal system. [7]
7b. Discuss steps to perform Accelerated Stability studies. [8]

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