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

CLASS: MPharm **SEMESTER: 2nd**
BRANCH: PHARMACY **SESSION: SP 2022**

SUBJECT: MPH203T COMPUTER AIDED DRUG DEVELOPMENT

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

INSTRUCTIONS:
1. The missing data, if any, may be assumed suitably. Answer any 5 questions
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.

1a. Define the following: [7X1=7]
- i. Response
- ii. Confounding
- iii. Dependent Variables
- iv. Independent Variables
- v. Resolution
- vi. Confounding
- vii. Contour Plots

1b. Explain in details the 2^3 level design, Fractional factorial design & Full factorial design [3+2+3=8]

2a. Express your views on the following: [2+2+2+1=7]
- i. Constrained and Unstrained Problems.
- ii. Blind and Double blind experiments
- iii. Concept of Fish Bone diagram
- iv. Screening the factors

2b. Discuss what do you understand by the following: [4X2=8]
- i. Data Collection
- ii. Data management
- iii. Integration
- iv. FTP

3a. i. Explain the central composite design [2]

ii. Discuss the effect of the TIME and TEMPERATURE in following design. Also, mention what type of design is this? [5]

Runs	Factor		Response
	Time (min)	Temperature(^{0}C)	Yield
1	80	200	85
2	50	200	64
3	80	180	70
4	50	180	100

3b. Explain the ACAT model. Discuss the different hybrid systems for clinical data management. [4+4=8]

4a. Write short notes on the following: [4+1+1+1=7]
- i. Discuss the different modes of electronic based systems used for Clinical data management
- ii. Topology
- iii. Neurons
- iv. Computer simulation of the whole organism

4b. Explain the following: [8]
- i. MLP Neural network
- ii. GRNN
- iii. RBFNN
- iv. Feed forward systems

5a. Explain "QbD is important in Pharmaceutical development " referring to ICH Q8 guideline [7]

5b. Elaborate a scientifically based QbD design for any Pharmaceutical R and D process. [8]

6a. Discuss statistical modeling in pharmaceutical research and development with a focus on descriptive and mechanistic modeling. [7]

6b. Detail about progress in pharmaceutical R and D through computer aided drug development [8]

7a. Explain in detail in-silico and invitro approaches for development of anticancer drug/any drug correlating to drug disposition hurdle in *invivo* system. [7]

7b. Write short note on : [2+3+3=8]

i. Intestinal permeation
ii. Active transport
iii. BBB-choline transporter

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