

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

CLASS: MPHARM
BRANCH: PHARMACY

SEMESTER : II
SESSION : SP/18

SUBJECT: MPH2005 COMPUTER AIDED DRUG DELIVERY SYSTEM
TIME: 3.Hours

FULL MARKS: 60

INSTRUCTIONS:

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
 2. Candidates may attempt any 5 questions maximum of 60 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) Discuss in detail about Advanced Compartmental Absorption and Transit model of human gastrointestinal tract. [6]
- Q.1(b) Write short notes on (i) input parameters required for GI simulation and (ii) advantage of *in silico* simulation. [6]
- Q.2(a) Using suitable example explain the importance of influx transporters in intestine for GI simulation. [6]
- Q.2(b) Using Carbamazepine as model drug, explain the importance of formulation factors in mechanistic modelling and simulation. [6]
- Q.3(a) 'PSA is an important tool in gastrointestinal simulation and modelling'. Explain the statement in detail with suitable examples. [6]
- Q.3(b) Discuss the biowaiver considerations of drugs using suitable examples. [6]
- Q.4(a) Discuss the strategy employed in '*in vitro-in vivo*' correlation in simulation technology using suitable example. [6]
- Q.4(b) Write short notes on (i) P-gp transporters (ii) OATP transporters and (iii) ASBT transporter [6]
- Q.5(a) Discuss precisely about the ICH Q8 guideline. [6]
- Q.5(b) Establish the ordinary differential equation (ODE) based mathematical model for spreading of infectious diseases and justify the assumption taken for this modelling. [6]
- Q.6(a) Write in details regarding factorial design. [6]
- Q.6(b) Establish the ordinary differential equation (ODE) based mathematical model for population growth considering some logistics constraint. [6]
- Q.7(a) Discuss the rationale of numerical simulation method in contrast to analytical modelling. [6]
- Q.7(b) Establish the numerical models of spreading the infectious diseases by using Euler's method. [6]

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