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**MPHARM**  
**(SEM II) THEORY EXAMINATION 2023-24**  
**COMPUTER AIDED DRUG DELIVERY SYSTEM**

**TIME: 3 HRS****M.MARKS: 75**

**Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A****1. Attempt all questions in brief.****10 x 2 = 20**

a.	Define optimal design with suitable examples.
b.	State the applications of scientifically based QbD with suitable examples.
c.	State the principle of action of BBB-choline transporter.
d.	Name the computational modeling techniques in pharmaceutical use with examples.
e.	State the concept of optimization.
f.	State the ethics of computing in pharmaceutical research.
g.	State the concept of computer simulation for proteins and genes.
h.	State the theoretical background of simulation for GI absorption.
i.	Define 'robotics' and mention its pharmaceutical uses.
j.	State the challenges of pharmaceutical automation.

**SECTION B****2. Attempt any two parts of the following:****2 x 10 = 20**

a.	Describe the descriptive versus mechanistic statistical modeling approaches in pharmaceutical research and development
b.	Elaborate on the applications of computers in pharmaceutical formulation development.
c.	Explain the applications of pharmaceutical automation,

**SECTION C****3. Attempt any five parts of the following:****7 x 5 = 35**

a.	Explain the regulatory and industry views on QbD following ICH Q8 guidelines.
b.	What do you mean by scientifically based QbD? Explain its applications with suitable examples.
c.	Suggest and explain the use of computers and software in the design of experiment and optimization of pharmaceutical formulations.
d.	What do you mean by 'parameter sensitivity' and 'virtual trial'? Explain.
e.	Highlight the legal protection means for the innovative use of computers in pharmaceutical R&D.
f.	Explain the role of computers in in vitro dissolution studies and IVIVC.
g.	Justify with examples the biowaiver considerations for computer-aided biopharmaceutical characterization.