Total No. of Questions : 6] **SEAT No. :**

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M.Sc. (Semester - IV)

DRUG CHEMISTRY

CH-463 : Drug Design

(2008 Pattern)

Time : 3 Hours] ***[Max. Marks : 80***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Answers to the two sections to be written in separate answer books.***
3) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Explain the terms in brief. **[4]**

i) Vector
ii) PCR
iii) Monoclonal antibody
iv) Recombinant DNA technology

b) Attempt any two of the following : **[10]**

i) Giving suitable example. Explain use of molecular biology techniques in developing viral vaceines.
ii) What is gene therapy? Explain its use in treatment of inherited disorders.
iii) Discuss use of knock-out mice in investigations of disease mechanism.

Q2) Answer any two of the following : **[12]**

a) What is meant by correlation, describe it. Differentiate between positive and negative correlation. Compute Karl Pearson's coefficient of correlation for the following data of age in years (X) and the duration of adjuvant therapy treatment in days (Y) for 10 individuals.

X :	8	12	15	20	30	38	45	55	65	80
Y :	5	7	8	8	12	8	10	12	15	13

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b) Write a note on Normal distribution. Discuss about its important properties.

c) Explain the concept of variation in statistical data. Compute standard deviation for the data shown below of increase in B.P after been administered by a certain drug for 8 patients.

–1, 2.5, 3.5, –2, 0, 1.2, 2.1, –1.5.

Q3) Answer any two of the following : **[14]**

a) Discuss in brief solid phase synthesis. What are its benifits over routine synthesis. With proper examples explain how this has helped in designing combinatorial libraries.

b) Explain in brief the concept of prodrugs. How has this approach led to better pharmaceuticals. Justify with proper examples.

c) Explain in brief membrane bound receptors. Discuss ion channels and GPCR.

SECTION - II

Q4) Answer any three of the following : **[18]**

a) Which physicochemical parameters are usually correlated with biological activity in QSAR. Discuss the correlation done by Corwin Hansch.

b) 2,4- Diaminopyrimidines are known to have wide range of biological activity. How would you approach to make better anticancer drugs based on this molecule using QSAR.

c) Explain in brief the steps involved in designing the molecule when the structure of the target is known (SBDD) with proper example.

d) Explain in brief

i) Newton-Raphson method

ii) Ab-initio method

iii) Molecular dynamics simulations

Q5) Answer any three of the following : **[12]**

a) Discuss the free Willson analysis in brief.

b) Statistical tests in QSAR

c) Conformational analysis using MM

d) Pharmacophone maping

Q6) Answer any two of the following : **[10]**

a) Explain the concept of 3D QSAR. Give the details of COMFA.

b) Topliss manual scheme for aromatic and non-aromatic series.

c) Factors affecting non-covalent interaction between drug and receptor.