

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

CLASS: BPHARM  
BRANCH: PHARMACY

SEMESTER : VIII  
SESSION : SP/18

SUBJECT: PS8405 DRUG DESIGN

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) Define and explain the terms i) Lead ii) Drug Design [4]  
Q.1(b) Mention and explain the major factors which governs drug design strategies. [4]  
Q.1(c) Describe the concept of lock and key to explain drug receptor interaction studies. [4]
- Q.2(a) Discuss the Grim's Hydride Rule to explain classical isosteres. [2]  
Q.2(b) Write short notes on use of bioisosters in therapy. [4]  
Q.2(c) Draw and demonstrate the type of isosteric or bioisosteric relationship between i) Folic acid and Methotrexate. ii) Guanine & 6-Thioguanine iii) PABA and Sulfa drugs [6]
- Q.3(a) Discuss antimetabolite concept of INH [2]  
Q.3(b) What do you understand by the term "Antimetabolite", describe anti-metabolite concepts of pyrimidine / purine antagonist with an example. [4]  
Q.3(c) Discuss the anti-metabolite theory proposed by Woods and Fildes and explain the bacteriostatic action of sulfa drugs. [6]
- Q.4(a) Discuss about the hydrophobic descriptor  $\Pi$  and describe its mathematical relation with logP. [2]  
Q.4(b) What is the importance of Hansch equation for establishing better therapeutic efficacy of drugs? [4]  
Q.4(c) What is the importance of molecular modeling software to design and develop ligands? [6]
- Q.5 Write short notes on  
(a) Conformers and drug design [4]  
(b) GPCR [4]  
(c) QSAR and drug design [4]
- Q.6(a) What are the importance of physical factors which governs the rational drug design studies. Highlight on i) Hydrogen bonding ii) Complexation iii) Use of surfactants to improve drug action. [6]  
Q.6(b) What are the different route of administration of drug? How ionization plays an important role for absorption of i) acidic ii) basic drugs. [6]
- Q.7(a) Describe and explain drug receptor theories with suitable examples. [6]  
Q.7(b) What are the forces which allow ligands to bind to the receptors? Explain the binding of acetylcholine esterase enzyme. [6]

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