Shahjalal University of Science & Technology, Sylhet

Department of Biochemistry and Molecular Biology

3rd Year 2nd Semester B. Sc. (Hons) Final Examination, **2013**

Course No. : **BMB -332** Course Title: **Pharmaceutical Chemistry**

Credit: **3.0** Total Marks: **70** Time: **3** Hours

Instructions:

- ***Number in the right side indicates the marks of the question.***
- ***Marks for each question are same.***
- ***Answer any two (2) questions from each Part (A and B).***

Part- A

1.	a)	Define the term Bioavailability. How it can be determined?	2.5
	b)	Depending on chemical properties how different types of drugs are absorbed?	3
	c)	Write about bioavailability and other characteristics of following routes of administration- i) Intravenous; ii) Oral; iii) Inhalation; iv) Rectal.	1.5×4=6
	d)	What are dose and dosage regimen? Briefly discuss the factors that influence bioavailability.	1.5+2.5
	e)	Write shortly on-First pass metabolism.	2
2.	a)	Name the reactions involved in phase-1 biotransformation of drug. What are the purposes of these reactions?	1.5+2
	b)	Why liver is termed as the mandatory site for biotransformation? Justify- "Paracetamol is hepatotoxic in high dose."	2+2
	c)	Characterize the enzyme Cytochrome P-450 system.Illustrate the Cytochrome P-450 cycle.	2+3
	d)	Name different types of drug allergy. What do you mean by the process haptenization? How it induces drug allergy?	2+3
3.	a)	What are receptors? Describe the major receptor families that mediate the signaling mechanism with drug.	5.5
	b)	What are second messenger? Give some example of second messenger mediated signaling receptor.	2.5
	c)	Illustrate the term- Therapeutic window and therapeutic index. What do you mean by- 'Narrow therapeutic index of a drug'?	2.5+2
	d)	Why receptor regulation is needed? Describe the process of receptor down regulation with an example.	2+3

Part-B

4.	a)	What are toxic substances? "Dose defines toxicity"-explain.	1+2.5
	b)	Write about different types of toxic effect on the basis of exposure.	2.5
	c)	Define additive and synergistic effect.	2.5
	d)	What do you mean by Quantal Dose-Response relationship? Graphically show and define- ED_{50}, TD_{50} and LD_{50}.	2+3
	e)	Briefly write about the toxicological mechanism of the followings: i) α-bungarotoxin (snake venom); ii) α-amanitine.	4
5.	a)	What is rational drug designing? Write about the aims of drug designing.	1+2
	b)	What is molecular modification? How the solubility and membrane permeability of drug can be increased by molecular modification. Give example.	1+4
	c)	Define Pro-drugs and their use. Name the ways to reduce toxicity of drug.	2+2.5
	d)	Discuss the factors needed for pilot plant scale up. What is GMP?	3.5+1.5
6.	a)	Define Efficacy, Potency and Relative Potency. Write down and explain the occupation theory of drug-receptor interaction.	2.5+2
	b)	Discuss the acute and chronic toxicity test of drug.	5
	c)	What is Intrinsic efficacy? Explain and illustrate the Graded dose-response curve.	1+3
	d)	Graphically explain the mechanism of the followings: i) Partial agonist; ii) Competitive antagonist.	4