Enrollment No._____

NAVRACHANA UNIVERSITY
a UGC recognized University

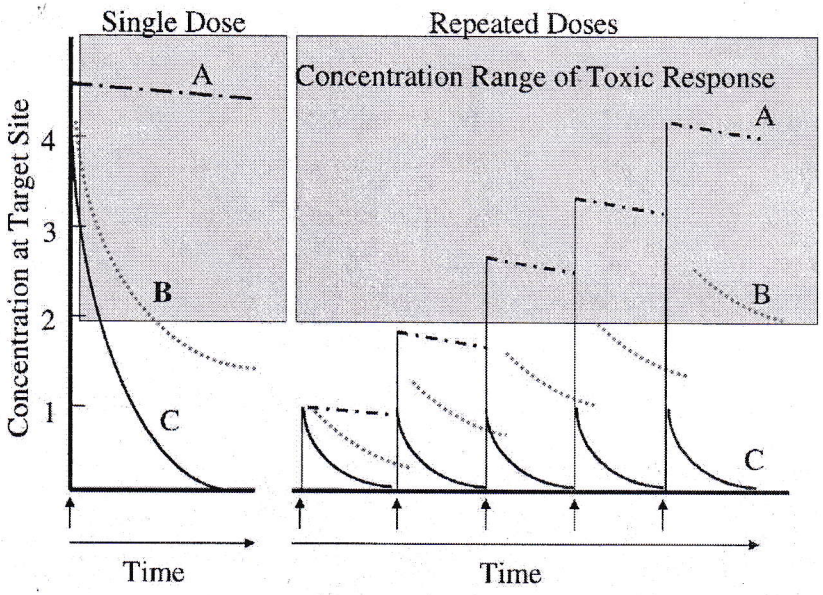
School: School of Science
Program/s: BMS
Year: 3rd **Semester:** 5th
Examination: End Semester Examination
Examination year: December - 2021

Course Code: BM302, **Course Name:** Toxicology and Pharmacology I
Date: 01/12/2021 **Total Marks:** 40
Time: 11.30am to 1.30 pm **Total Pages:** 03

Instructions:

- ➔ *Write each answer on a new page.*
- ➔ *Draw the diagram wherever necessary*
- ➔ *Stick to the Word Limit given in the Questions.*

Q. No.	Details	Marks	CO	BTL
Q.1	**Choose the Correct Option** 1. What are is true about environmental risk assessment? a) In the quotient method the Predicted estimated concentration (PEC) is compared to the Predicted no effect concentration (PNEC). b) The PNEC is the equivalent of the NOAEL in toxicity assessment. c) The PNEC is the equivalent of the Acceptable Daily intake (ADI) in toxicity assessment. d) The PEC is equivalent to the LOAEL in toxicity assessment. 2. What is true about the process of risk assessment? a) Acute exposure and chronic exposure from a chemical result in effects on a similar target organ, but only at a single high or a repeated low dose of exposure, respectively. b) DNA can be a toxicological receptor. c) A dose response curve is important to establish the LD50 which is an important parameter in modern toxicological risk assessment. d) The LD50 is a constant parameter reflecting the acute toxicity of a chemical for different species. 3. What is true for ADME characteristics? a) ADME characteristics describe what happens to a compound when it has entered the body. b) ADME characteristics describe the toxicodynamic phase. c) ADME characteristics determine the bioavailability of a compound upon oral intake. d) ADME characteristics describe how a compound becomes toxic including the mechanism of action. 4. What type of biotransformation reactions can play a role in the mammalian metabolism of aniline?	**1x6=6**	CO1,2,3,4	BTL1,2,3,4

	a) N-Acetylation, hydroxylation, glucuronidation. b) Epoxidation, methylation, sulfation. c) Glutathione conjugation, reduction, N-hydroxylation. d) Nitroreduction, glycine conjugation, aromatic ring opening. 5. Which of the following statements explains receptor affinity? a) It is half the dose needed for maximal response. b) It is a measure of how tightly a ligand binds to a receptor. c) It is the maximum response downstream of a receptor. d) It is the concentration of ligand that causes side effects. 6. O-methylation is an important pathway of xenobiotic biotransformation in an organism. Substances undergo this route of biotransformation if they contain the following functional group: a) Nitro group b) Amino group c) Thiol group d) Carboxyl group			
Q.2	**Answer the following (20-30 words only per answer)** 1. Draw the homeostasis curve of a toxicant showing the different conditions. 2. "Drug dose should be decided on the basis of individual physiology". Justify 3. List down two ways through which the chemicals act as EDCs. 4. Why does drugs have multiple Kd values? Cite one example of it 5. F98 is the residue which is been targeted by the kinase inhibitors. Name the drug which is used to target this and state its importance for treating the disease.	**2x5=10**	CO1,2,3,4	BTL1,2,3,4
Q.3	**Answer the following (max 300-350 words per answer)** 1. Consider the following graph:  	**3x4=12**	CO1,2,3,4	BTL1,2,3,4

	The graph shows a comparative account of single and repeated dose of drugs A,B and C with respect to time. Among of the three drugs which one is considered to be more toxic? Taking the example of different drugs explain the importance of Kd, Ka and PKa values (the answer should be in accordance of the graph). 2. Classify the different enzymes of Phase I and Phase II reactions with detailed mechanism citing a suitable xenobiotic/drug. 3. A xenobiotic enters into the aquatic system, Analysis was done in different organisms ranging from phytoplanktons to Fish to the Humans. There was an increase in the concentration of this xenobiotic in the biotic system. a) Discuss this matter using Biotransformation, magnification. b) What will be the ultimate fate of this and Why? c) Identify the route through which it can enter the biotic system. 4. Discuss the factors affecting Drug metabolism. Elucidate the fate of a drug when it enters the cell.			
Q.4	**Answer the following (max 500 words per answer).** 1. A toxicant enters into the system through oral route into different organisms. Being a toxicologist, design different parameters to validate the toxicity. Explain the different doses of it, how it may cause toxicity to the organism. Plot the quantal dose-response relationship. OR 2. Taking an example, explain the pharmacokinetics of a drug. State in detail, what is the fate of the drug in the body. How does the drug's efficacy can be validated before selling in the market? 3. Design a study where you can monitor following factors for a xenobiotic/toxicant/drug: a) Importance of Route of Entry b) Role of ER in mediating the phase reactions. c) Effects in Acute vs chronic evaluation. d) Therapies for the poisoning.	**6x2=12**	CO1,2,3,4	BTL1,2,3,4

**********All the Very Best**********