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 - 2022

**Course Code:** BM302 **Course Name:** Toxicology and Pharmacology I
**Date:** 02/12/2022 **Total Marks:** 40
**Time:** 14.30 to 16.30 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**<br><br>1. What are is true about environmental risk assessment?<br>a) In the quotient method the Predicted estimated concentration (PEC) is compared to the Predicted no effect concentration (PNEC).<br>b) The PNEC is the equivalent of the NOAEL in toxicity assessment.<br>c) The PNEC is the equivalent of the Acceptable Daily intake (ADI) in toxicity assessment.<br>d) The PEC is equivalent to the LOAEL in toxicity assessment.<br><br>2. What is true about the process of risk assessment?<br>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.<br>b) DNA can be a toxicological receptor.<br>c) A dose response curve is important to establish the LD50 which is an important parameter in modern toxicological risk assessment.<br>d) The LD50 is a constant parameter reflecting the acute toxicity of a chemical for different species.<br><br>3. 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:<br>a) Nitro group<br>b) Amino group<br>c) Thiol group<br>d) Carboxyl group | 1x6=6 | CO1,<br>CO 2,<br>CO 3,<br>CO 4 | BTL1,<br>BTL 2,<br>BTL 3,<br>BTL 4 |

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|---|---|---|---|---|
| | 4. What type of biotransformation reactions can play a role in the mammalian metabolism of aniline?<br>a) N-Acetylation, hydroxylation, glucuronidation.<br>b) Epoxidation, methylation, sulfation.<br>c) Glutathione conjugation, reduction, N-hydroxylation.<br>d) Nitroreduction, glycine conjugation, aromatic ring opening.<br><br>5. The organs least involved in systemic toxicity are ---<br>a) brain and peripheral nerves.<br>b) muscle and bone<br>c)liver and kidney<br>d) hematopoietc system and lungs<br><br>6. What is true for ADME characteristics?<br>a) ADME characteristics describe what happens to a compound when it has entered the body.<br>b) ADME characteristics describe the toxicodynamic phase.<br>c) ADME characteristics determine the bioavailability of a compound upon oral intake.<br>d) ADME characteristics describe how a compound becomes toxic including the mechanism of action. | | | |
| **Q.2** | **Answer the following (20-30 words only per answer)**<br>1. Draw the homeostatis curve of a toxicant showing the different conditions.<br>2. "the dose of the drug should be governed on the basis of ones own physiology". Justify<br>3. List down two ways through which the chemicals act as EDCs.<br>4. Enlist the difference between regulatory toxicology and Mechanistic toxicology.<br>5. List the routes of exposure in the increasing order of most rapid response. | **2x5=10** | CO1,<br>CO 2,<br>CO 3,<br>CO 4 | BTL1,<br>BTL 2,<br>BTL 3,<br>BTL 4 |
| **Q.3** | **Answer the following (max 300-350 words per answer)**<br>1. You have worked at a sulfite facility for 15 years. The facility does not require protective equipment, and you have developed a number of serious health effects in the last 7 years. You are possibly experiencing what type of exposure and why?<br>2.Classify the different enzymes of Phase I reactions citing a suitable xenobiotic/drug.<br>3. A pesticide enters into the aquatic system from agricultural run off. Analysis was done in different organisms ranging from $1^0$ producers to $1^0$ Consumers to Apex Consumers. There was an increase in the concentration of this xenobiotic in the biotic system.<br>a) Identify the route through which it can enter the biotic system.<br>b) What will happen to each trophic level organisms?<br>c) What will be the ultimate fate of this pesticide? Justify giving reasons.<br>4. Explain the mechanism behind how the cytochrome P450 does its catalyzing reactions of any xenobiotics. | **3x4=12** | CO1,<br>CO 2,<br>CO 3,<br>CO 4 | BTL1,<br>BTL 2,<br>BTL 3,<br>BTL 4 |

| Q.4 | **Answer the following (max 500 words per answer).** | 6x2=12 | CO1, CO 2, CO 3, CO 4 | BTL1, BTL 2, BTL 3, BTL 4 |
|---|---|---|---|---|

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 dose-response relationship.

OR

2. What will happen when a person is acquainted with.
   a) Snake Bite b)Mutagens c)Teratogens d)Drug Overdose.
3. Design a study where you can monitor following factors for a toxicant:
   a) Importance of hydrolases
   b) Whether it can act as EDC or not?
   c) Effects in Acute vs chronic evaluation.
   d) Its detoxification mechanism and therapies used.

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