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SARDAR PATEL UNIVERSITY
M.Sc (II Semester) Examination (CBCS)
Monday, 3rd December, 2012
2:30 pm to 5:30 pm
Biochemistry

PS02CBIC02 – Biochemical & Environmental Toxicology

TOTAL MARKS: 70

Q.I Choose the correct answer for the following and write in your answer sheet (*Only correct option against given question number needs to be written in provided answer book*) **(08 Marks)**

- 1) The passage of a chemical through the cellular wall into the cytosol is termed as a
 (a) Diffusion (b) phase I (c) Phase 0 (d) None of the above
- 2) Which of the following enzyme can utilize phase I reaction product as a substrate?
 (a) CYP 450 Oxidase (c) Alcohol Dehydrogenase
 (b) Epoxide hydrolase (e) none of the above
- 3) If the concentration range over which toxic effects and/or therapeutic effects are seen is narrow,
 (a) TDM should be done (c) Dosage should be increased
 (b) TDM is not required (d) none of the above
- 4) If tetraethylpyrophosphate (TEPP) has LD50 of 1mg/kg of body weight and tetrachlorodibenzodioxin (TCDD) has LD50 of 0.1mg/kg of body weight, which is more toxic?
 (a) TEPP (c) both have same toxicity
 (b) TCDD (d) none of the above
- 5) Absorption, distribution, metabolism and elimination of a toxicant in human is termed
 (a) Toxicodynamics (b) Xenobiotic metabolism (c) Toxicokinetics (d) None of the above
- 6) Chemicals that induce structural chromosomal mutations are termed
 (a) Aberrators (b) Clastogens (c) modifiers (d) none of the above
- 7) Estimated dose at which 5 % of the test subjects die is termed
 (a) LD 95 (b) LD 5 (c) LD 50 (d) None of the above
- 8) Itai-Itai - skeletal deformities with severe pain is by
 (a) Cadmium toxicity (c) lead toxicity
 (b) Arsenic toxicity (d) Mercury toxicity

Q.II Answer any SEVEN of the following questions briefly:

(14 marks)

1. Differentiate between Acute toxicity and chronic toxicity.
2. Differentiate between Toxicokinetics and Toxicodynamics
3. Differentiate between synergism and antagonism.
4. What are chemical antidotes? Cite two examples.
5. What are the sources and symptoms of lead poisoning?
6. Enlist the criteria required for therapeutic drug monitoring.
7. What is genotoxicity?
8. List toxicants that disturb calcium homeostasis.
9. What is the significance of determining Therapeutic index of drug?

Q.III. Answer the following questions in detail.

1. (a) What is dose-response curve? Illustrate determination of ED50 values using dose response curve. (06)
(b) Explain division of different phases in toxicants' metabolism. (06)
OR
(b) Explain the Bruce Ames test. (06)
2. (a) Describe phase II reactions of biotransformation of xenobiotics with glutathione conjugation and sulfation as examples (06)
(b) Give a brief account of mechanism of metal toxicity and its amelioration. (06)
OR
(b) Write a brief note on: Phase-III metabolism of xenobiotics. (06)
3. (a) State the environmental fate of persistent xenobiotics like pesticides. (06)
(b) List toxicants that disturb calcium homeostasis. How metals like lead, cadmium, mercury, etc. and some pesticides perturb normal calcium homeostasis? (06)
OR
(b) Explain HPRT gene-mutation test. (06)
4. (a) Explain the chronic toxicity, metabolism and antidote for paracetamol. (06)
(b) Discuss the sources and toxic effects of air pollutants. (06)
OR
(b) Describe the environmental implications of use of insecticides. (06)