

1. Define poisons and describe several functions for poisons. How has the receptor concept influenced the development of toxicity? (20%)
2. What are some of the advantages and disadvantages of using cancer bioassay results at the maximum tolerated dose (MTD) for interpreting likelihood of carcinogenicity to humans? (10%)
3. What is the difference between a biologically based extrapolation and an empirically based extrapolation? Is one more reliable than the other? (10%)
4. Explain the following terms and their toxicological significance: (15%)
 - a. Genotoxicity
 - b. Ames test
 - c. Metabolic activation
 - d. DNA-adduct
 - e. Phase II reaction
5. Describe as much as possible how a normal cell becoming transformed cancerous cell when exposed to chemical carcinogen. (10%)
6. Oxidative stress has become an important research topic in environmental toxicology, give five examples of reactive oxygen species (ROS) or reactive nitrogen species (RNS). (5%)
7. Draw a diagram showing the major sites of xenobiotic absorption, metabolism, and excretion, in a human body. (10%)
8. Describe cytochrome P450 oxidation cycle and its function in detoxification process. (10%)
9. Describe the effect enterohepatic circulation on the detoxification process of xenobiotics. (10%)