

本試題是否可以使用計算機：可使用，不可使用（請命題老師勾選）

1. Science can be considered as organized precise knowledge or as the process by which such knowledge is obtained. The demands of science for rational, unemotional, experimentally demonstrable bases for its beliefs lead to its greatest strengths. Exposure to chemical agents can result in primary target damage, target organ injury, and death to organism. Please show an approach to the study of molecular, cell, and organ mechanisms of lead toxicity. (22%)
2. Draw a typical dose-response curve (lethality vs. dose) and mark the position of NOAEL. Give the definition of this term. (6%)
3. Describe cytochrome P450 oxidation cycle and its function in detoxification process. (9%)
4. Describe why biotransformation is considered as a balance between bioactivation and detoxification using ethylene as an example. (9%)
5. Describe and giving examples for the following interactions between two toxicants: synergism, antagonism, and potentiation. (9%)
6. Compare phase I and phase II reactions with respect to: (a) location of the reactions (b) structure change during the processes (c) polarity and water solubility. (10%)
7. What are the objectives of subchronic toxicology studies? What benefits the in vitro toxicity testing system can provide? (8%)
8. 請翻譯下面一段文字。(12%)

The agricultural chemicals commonly labeled as pesticides are perhaps the largest group of poisonous substances being disseminated in our environment. Pesticides denote any agent intended for preventing, destroying, repelling, or mitigating any pest, and this classification may be subdivided into groups such as insecticides, acaricides, nematocides, herbicides, avicides, rodenticides, molluscicides, etc., depending on the species of pest. It would be reasonable to state that neither could we have achieved, nor can we maintain, the standard of living which we enjoy today without the use of these chemicals. There is no question of stopping the annual application of these agents on our gardens and crops, our forests and field, or on our animals and ourselves. The pesticide dilemma is not whether to use or not use—but the choice of agent, when it must be used, and how much should be applied. There are only a few of the many incidents in which pesticides have been involved in widespread poisonings, but they serve to at least highlight the toxicological problems arising from pesticides. It should be noted that many of these incidents were a consequence of abuse, misuse, or ignorance of the chemicals involved.

(背面仍有題目,請繼續作答)

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9. Define the following terms: (15%)
- Acceptable Daily Intake (ADI)
 - Transversion, transition and frameshift mutation
 - LD50
 - MTD
 - Ames test