編號：　474　系所：環境醫學研究所乙組　　科目：環境毒理學

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. The science of toxicology contributes to reducing the harm caused to human beings as a result of exposure to chemicals, drugs, pesticides, or other substances. Explain how a toxicologist uses these toxicological data in the risk assessment. (12%)
2. Hypothesis is the most important mental technique of an investigator. The main function of a hypothesis is to suggest new experiments or new observations. Most experiments and many observations are carried out with the deliberate object of testing a hypothesis. Please show an approach to the study of mechanisms of mercury toxicity. (12%)
3. Define poisons and describe several functions for poisons. (10%)
4. Draw the dose-response curves for two toxicants on a diagram to meet the following conditions: $LD_{50A} > LD_{50B}$ and $LD_{10B} > LD_{10A}$. Then comment on which toxicant is considered more toxic. (8%)
5. Describe and discuss their advantages and disadvantages of the two major models for estimating the risk of toxicant exposure at low doses below NOAEL. Which one is often used for cancinogenic toxicants? (8%)
6. Describe how pH values affect the partitioning of salicylic acid across the gastric mucosa and influence the salicylic acid's absorption in gastrointestinal tract. (8%)
7. Draw a diagram to show the anatomy of alveoli and respiratory membrane. Then describe the functions of type I and II cells. Based on the diagram, draw more diagrams to explain the following two chronic responses of lung injuries: fibrosis and emphysema. (9%)
8. Explain the following terms and their toxicological significance: (15%)
   a. Transversion mutation.　b. Free radical.　c. Tumor promotion.
   d. Cytotoxicity.　e. Phase II reaction
9. Give two examples happened recently in our society related to toxicants and their impacts. (10%)
10. Describe as much as possible how a normal cell becoming transformed cancerous cell when exposed to hormone-like environmental chemicals. (8%)