

※ 考生請注意：本試題不可使用計算機

1. Define poisons and describe several functions for poisons. (8%)
2. Please show an approach to the study of endocrine disruptor. (10%)
3. Explain the following terms and their toxicological significance: (16%)
 - a. Phase I reaction.
 - b. Phase II reaction.
 - c. Reactive oxygen species.
 - d. Cytotoxicity.
4. Please identify the chronic health effects of exposure to airborne particulate matters. (10%)
5. Please elaborate on the difference between innate immunity and adaptive immunity. (15%)
6. Please explain the following terms: (8%)
 - a). Photochemical reactions.
 - b). Mast cells.
7. Describe and giving examples for the following interactions between two toxicants: synergism, antagonism, and potentiation. (9%)
8. Describe the cause and effect of enterohepatic circulation during the detoxification process of xenobiotics. (7%)
9. 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. (7%)
10. An abandoned pentachlorobenzene (PCP) manufacturing plant is highly contaminated with residual PCP in the An-Shun area of Tainan. Assuming you are invited by the Tainan city government to provide your expert opinion on setting an environmental exposure guideline for fish ingestion of PCP, please use the following information to develop the PCP concentration limit of fish being sold in the market. (10%)
 - i. Toxic dose, TD_{50} , for rats: 5.8 mg/kg/day
 - ii. Average weight of the fish in the market: 600 g
 - iii. Average body weight of the city resident: 60 kg
 - iv. 5th, 50th, and 95th, percentile fish consumption rate: 5.3, 20.1, and 63 g/day for the residents of Tainan
 - v. Uncertainty factor: 1000
 - vi. The mayor promises the safety guideline will protect top 5 percent of heavy fish consumers.