

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. What are the objectives of subchronic toxicology studies? What benefits the in vitro toxicity testing system can provide? (10%)
2. Define the following terms: (15%)
 - a. Acceptable Daily Intake (ADI)
 - b. Genotoxicity
 - c. LD50
 - d. MTD
 - e. DNA-adduct
3. Draw a diagram and use the diagram and the fact, pK_a (salicylic acid) = 2.97, to describe how pH values affect the partitioning of salicylic acid across the gastric mucosa and influence the salicylic acid's absorption in gastrointestinal tract. (6%)
4. Define the following terms, "ADI", "TDI", and "MRL". Draw a diagram to describe how the ADI, TDI, and MRL can be determined. Use the diagram to explain why an MRL value for ractopamine is set to be 10 ppb and why this value is considered safe for consumers. (9%)
5. Tabulate the types of phase I and II reactions, as well as their responsible enzymes, in the biotransformation of the xenobiotics. Also discuss why (1) they result in better efficiency in urinary excretion of xenobiotics; (2) the biotransformation is considered as a balance between bioactivation and detoxification. (10%)
6. Toxicology attempts to define the harm that toxicants can cause damages to human beings and it is an integral part of the risk assessment process. Please show an approach to the study of arsenic (As) toxicity. (13%)
7. Give an example happened in our society related to toxicants and their impacts. (12%)
8. 請以免疫毒性反應的角度，論述空氣污染為什麼可能造成人類一些重要疾病的發生？(15%) 上述重要疾病有哪些？(2%)
9. 解釋名詞：(8%)
 - a). Interleukin
 - b). Cytotoxic T cells