

以下為選擇題，每題五分，請作答於試卷內之「選擇題作答區」

- What is the correct order of a conventional water treatment process:
 - Disinfection→Sedimentation→Coagulation→Flocculation→Filtration
 - Sedimentation→Filtration→Disinfection→Coagulation→Flocculation
 - Disinfection→Sedimentation→Filtration→Coagulation→Flocculation
 - Coagulation→Flocculation→Sedimentation→Filtration→Disinfection
- Waste is considered hazardous because of its:
 - Physical characteristics
 - Quantity
 - Chemical/infectious characteristics
 - All of the above
 - None of the above
- Which statement below is **not true** for environmental hormones?
 - they are also called endocrine disrupting compounds
 - they sometimes occur at trace concentrations (ng/L)
 - they bioaccumulate, but are not persistent in the environment
 - they have been proposed to cause decrease in fertility, increases in birth defects and altered sexual expression
- LD₅₀ is used for measuring toxicity of a compound.
If compound A has LD₅₀ = 5 mg/L and compound B has LD₅₀ = 7 µg/L, which compound (A or B) is more toxic?
 - It neglects the long term (chronic) effect
 - It is not as accurate as LC₅₀
 - It can only be tested on the fish.
 - It can only be tested on mice.
- In sludge digestion, which of the following can be recovered as an energy source?
 - Methane; (b) Carbon dioxide; (c) Scum; (d) Carbon monoxide.
- H₂O is a
 - polar molecule
 - non-polar molecule
 - both polar and non-polar molecule
 - neither of the above
- In a clean lake environment (not heavily polluted), compound X (Molecular Weight = 355, pKa = 3.7, Log K_{ow} = 3.0) will mostly exist in its
 - Protonated form
 - Deprotonated form
 - Half protonated and half deprotonated form
 - Neither of the above

以下為簡答及計算題，每題十分，請作答於試卷內之「非選擇題作答區」

- An organic compound A undergoes first order degradation in the aqueous environment, having degradation constant of 0.1 per hour and initial concentration of 2 mg/L. What is the half life of this compound A?
- (a) When the air is clean (no contamination), what is the pH of the rain water? Please explain.
(b) What is 'acid rain'?
- 空氣品質良窳程度常使用空氣污染指標表示，請說明 PSI (Pollutant Standards Index) 與 AQI (Air Quality Index) 兩種指標內涵及計算方法，並指出何者為目前我國使用的指標。
- 空氣污染控制技術中有關粒狀物控制方法 (Particulate Control)，請說明常用的控制方法、各個控制方法對粒狀物控制的機制(mechanisms)、及適用的粒狀物粒徑範圍。
- 依據有害事業廢棄物認定標準，有害事業廢棄物以下列方式依序判定：
 - 列表之有害事業廢棄物
 - 有害特性認定之有害事業廢棄物
 - 其他經中央主管機關公告者
 依據第二款，請說明依有害特性認定之有害事業廢棄物種類。
- 掩埋為常用的廢棄物處置方法，請分別說明三種主要的掩埋法，包括適用的廢棄物及掩埋技術。