

國立屏東科技大學 九十七 學年度 碩士班暨碩士在職專班招生考試
環境保護概論

UNREGISTERED

一、 名詞解釋：(40%)(寫出中文翻譯者最多給與2分)
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1. Kyoto Protocol :
2. Persistent organic pollutants :
3. renewable resource :
4. Fuel cell :
5. Exotic organism :
6. Coliform bacteria :
7. Biofuel :
8. Biomagnification :

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二、 簡答題

1. 在環境管理實務上，常提到的管理邏輯為PDCA，請分別說明其個別代表之意義為何？(10%)
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2. 以下為屏東科技大學三月份連續六日大氣粒狀污染物濃度值 182、184、168、170、190、174 $\mu\text{g}/\text{Nm}^3$ ，試計算下列的敘述統計量？(A)全距 (3%)，(B)變異數(3%)，(C)標準差 (3%)，(D)變異係數(3%) (E) 該六日平均的粒狀污染物濃度為何？(3%) (F)承上題該平均值是否能代表屏東地區三月份的粒狀物濃度？請說明立論的理由(5%) (該題總分 20 分，請計算至小數點以下二位，如果可以請列出公式)
3. 何謂生態工法？與其他工程工法之差異性為何？(15%)

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三、心得寫作(15%)

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本題參考 ET TODAY 2008/01/07 記者陳園淳的報導，以下為新聞內容：「在我們的生活中，塑膠製品可以說是無所不在，不過，塑膠內的塑化劑，當心危害到我們的下一代！最新研究發現，塑化劑會導致孕婦甲狀腺素分泌過低，影響胎兒的中樞神經和生長。……」該篇報導源自 Human Reproduction Vol.22, No.10 pp. 2715–2722, 2007 的學術論文，塑化劑的問題在台灣十分嚴重，由於該論文的呼籲使我國的環保署重新再度思考塑膠袋使用的問題。請閱讀下面的文章”Associations between urinary phthalate monoesters and thyroid hormones in pregnant women”的摘要，依據文章的內容寫出自己的心得。

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Associations between urinary phthalate monoesters and thyroid hormones in pregnant women

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BACKGROUND: Maternal hypothyroidism during pregnancy can cause adverse effects in the fetus. Scientific evidence has shown that probable thyroid-like function of some phthalates *in vitro* and *in vivo*, and phthalates exposure, can begin in utero. This study investigated the association between phthalate exposure and thyroid hormones in pregnant women. **METHODS:** Serum and spot urine samples were collected from 76 Taiwanese pregnant women at second trimester. Thyroid hormones, including thyroid-stimulating hormone (TSH), triiodothyronine (T₃), thyroxine (T₄) and free T₄ (FT₄) were analysed in serum samples, and five urinary phthalate monoesters, including mono butyl phthalate (MBP), monoethyl phthalate (MEP) and mono ethylhexyl phthalate (MEHP), were measured. **RESULTS:** Urinary MBP, MEP and MEHP, the median levels of which were 81.8, 27.7 and 20.6 ng/ml, respectively, were the predominant substances in the urinary phthalate monoesters. Significant mild negative correlations were found between T₄ and urinary MBP ($R = -0.248, P < 0.05$), and between FT₄ and urinary MBP ($R = -0.368, P < 0.05$). After adjusting for age, BMI and gestation, urinary MBP levels showed negative associations with FT₄ and T₄ (FT₄: $\beta = -0.110, P < 0.001$; T₄: $\beta = -0.112, P = 0.003$). **CONCLUSIONS:** Exposure to di-*n*-butyl phthalate (DBP) may affect thyroid activity in pregnant women, but how DBP affects thyroid function is unclear. Further studies are needed to elucidate the mechanism of action and to investigate whether any other factors related to DBP exposure alter the thyroid function.

Keywords: pregnant women; urinary phthalate monoesters; thyroid hormones.