國立台灣科技大學九十八學年度碩博士在職專班招生試題

系所組別： 管理研究所EDBA博士在職專班

科　目： 管理實務

（總分為100分）

一、請論述企業之社會責任。（25%）

二、企業高階主管應具備哪些專業條件與人格特質，請論述之。

（25%）

三、請評論行政院於 1 月 18 日所發放 3600 元消費券的優缺點，並說

明其對經濟的影響。（25%）

四、面臨新的 M 型化社會，企業應如何因應？試舉例說明之。（25%）

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科　　目：　統計學

Statistics

共六題，總計 100 分。依序作答。

1. (10%) A bag contains seven coins — five fair coins (fair coin — a head on one side and a tail on the other side), one coin with a head on both sides, and one with a tail on both sides. Randomly select one coin from the bag and flip the selected coin. Given that the flip results in a head, what is the probability that the selected coin is a fair coin.

2. (10%) A random sample $\{X_1, \ldots, X_{100}\}$ of size 100 is drawn from a normal population with unknown mean μ and known variance $\sigma^2 = 200^2$. Suppose sample mean $\bar{X} = \sum_{i=1}^{100} X_i / 100 = 25$ is observed. Can we accept the hypothesis that $\mu = 40$? Support your answer.

3. (30%) A quality control engineer tries to perform a hypothesis testing on the defective rate p of a production line. The engineer keeps inspecting the items until he finds the first defective. Let T denote the total number of items the engineer inspects. The engineer wants to test the hypothesis $H_0 : p \geq 10\%$ against $H_1 : p < 10\%$.

    (a) Which of the following regions is an appropriate *critical region*? Why?

      i. $\{T \geq k\}$ for some constant k.
      ii. $\{T \leq k\}$ for some constant k.

    (b) What is the probability distribution of T?

    (c) Find the *type I error rate* of the test for $k = 15$.

4. (20%) State whether each of the following variables is quantitative or qualitative and indicate the measure scale being used.

    (a) annual sales

    (b) soft-drink size (small, medium, or large)

    (c) earnings per share

    (d) method of payment (cash, check, credit card)

5. (10%) A sample of ten stocks on the New York Stock Exchange shows the following price-earning ratios

$$9 \quad 4 \quad 6 \quad 7 \quad 3 \quad 11 \quad 4 \quad 6 \quad 4 \quad 7$$

Compute the mean, median, mode, range, variance, and standard deviation.

6. (20%) Suppose $P(A) = .40, P(A|B) = .60$ and $P(B|A) = .30$.

    (a) Find $P(A \cap B)$ and $P(B)$.

    (b) Are events A and B independent? Why or why not?