

長庚大學114學年度碩士班考試招生筆試試題

系所：職能治療學系行為科學碩士班臨床心理學組 考試科目：心理學方法

注意：請詳細閱讀下列試題，並請標明題號依試題順序將答案書寫於答案卷上。 本試題共 4 頁：第 1 頁

一、選擇題 (40 分，共 10 題，每題 4 分)

1. There are 50 cases in this bivariate distribution. If the cut score on X had been moved to 41, as shown in Figure 1, how many false negatives are there?

- (A) 4
- (B) 8
- (C) 17
- (D) 21

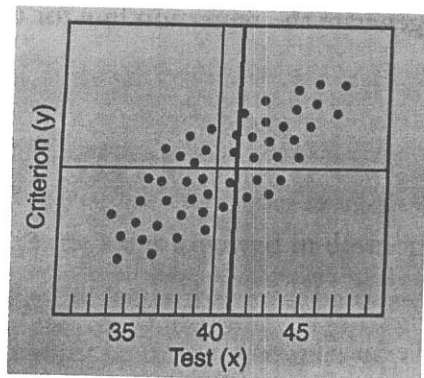


Figure 1. the bivariate distribution

2. Following the data shown in Figure 1, what is the sensitivity here?

- (A) around 0.81
- (B) around 0.72
- (C) around 0.65
- (D) around 0.34

3. The validity coefficient for the College Academic Test (CAT, X variable) for predicting freshman GPA (the Y variable) is $r_{xy}=0.6$. Here are the means and SDs for X and Y; what is the predicted GPA for a CAT score of 70

	Mean	SD
X	50	10
Y	3.00	.40

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- (A) 2.12
 - (B) 3.22
 - (C) 3.48
 - (D) 3.54
4. Following the data shown in item 3, what is the standard error of estimate for these data?
- (A) 8
 - (B) 10
 - (C) 0.24
 - (D) 0.32
5. In the negative skew distribution, which statement is true?
- (A) Mode is smaller than Mean
 - (B) Median is smaller than Mean
 - (C) Mode is smaller than Median
 - (D) Median is smaller than Mode
6. What is the primary function of the Central Limit Theorem (CLT) in statistics?
- (A) It states that the sample mean always equals the population mean.
 - (B) It ensures that the distribution of the sample mean approaches normality as the sample size increases, regardless of the population distribution.
 - (C) It guarantees that every dataset of samples would be normally distributed.
 - (D) It proves that all statistical tests are valid for any sample size.
7. To enhance the reliability of a test, which of the following strategies is the most effective?
- (A) Reduce the number of test items
 - (B) Use clear and unambiguous messages in test items
 - (C) Vary the difficulty level of each question randomly
 - (D) Allow test-takers to interpret questions in their own way

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8. Which of the following factors could decrease statistical power?

- A) Increasing the variability in the data measurement
- B) Increasing the effect size
- C) Increasing the significance level (α)
- D) Increasing the sample size

9. Which of the following statements are not strengths of non-probability sampling?

- A) It allows for results to be generalized to the entire population.
- B) It is useful when a random sample is difficult or impossible to obtain.
- C) It is typically quicker and more cost-effective than probability sampling.
- D) It may introduce bias, making results less representative of the population.

10. How to remove extraneous variables in an experiment? Which of the following is NOT true?

- A) the randomized subjects sampling.
- B) Matching participants based on characteristics like age and gender.
- C) Restricted the subject's ability to respond in an experiment.
- D) Decreasing the noise from the environment.

二、填充題 (25 分，共 4 題)

1. 如果一間學校男女比率是 4:6，總共 50 名學生。如果今天要抽 3 位學生出去參加比賽，這三位學生都是女生的機率是多高？(可以用算式或是最簡分數呈現)(5 分)

2. 若有一間攤販，銷售成衣的件數情況如下

銷售量	0	1	2	3	4	5
機率	0.2	0.1	0.1	0.2	0.3	0.1

請問每天銷售的期望值(5 分)與變異數(5 分)

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3. 根據經驗某牌電視機的使用年限符合指數分配，因此某部門品管經理想知道某月份出產的電視機的使用年限，因此他隨機抽樣 900 台，結果平均使用年限為 1000 小時，標準差為 50 小時，請問使用期限 95%的信賴區間為何?(5 分)

$$Z_{0.05}=1.64, Z_{0.025}=1.96$$

4. 如果有一個研究想檢驗性別(男/女)對於旅遊國度(美國，捷克，法國，日本，澳洲)的選擇是否有偏好的差異，請問此研究要用甚麼檢驗方式(3 分)，其自由度為何(2 分)

三、簡答題 (12 分)

請問在多元迴歸中，若有 n 筆青少年受試者資料，用智力(X_1)與注意力(X_2)去預測學業(Y)，如果迴歸式如下

$$Y = \beta_1 X_1 + \beta_2 X_2$$

- 請問 β_1 的意義 (4 分)
- 請問 β_1 需要檢驗嗎?若需要，其該如何假設?(4 分)
- 同上，上述的統計考驗中，其自由度為多少?(4 分)

四、申論題 (23 分)

在心理學研究中我們常常用多個預測變項(X_1, X_2, X_3)去預測一個效標變項(Y)，如下列的算式呈現 $Y = aX_1 + bX_2 + cX_3$ ；但是實際上的現象中，所謂的效標變項也可能會影響預測變項，此稱為 transactional model. 以此為基礎回答下列的問題

- 請用一個例子說明 transactional model (7 分)
- 請問若你想要探討這個現象或是問題，你會用怎樣的研究方式(8 分)以及統計方法去檢驗變項間的關係(8 分)