

※ 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 is the definition of each of the following terms? (6%)

(a) Sensitivity

(b) Specificity

Are they (sensitivity and specificity) measures of validity or reliability? (4%)

2. (a) Please describe the definition of confounder. (6%)

(b) Please describe how to handle confounding factors in study design and data analysis. (10%)

3. Please describe the definitions of frequency matching and individual matching. (8%)

4. Each of the following problems represents a major threat to the validity of an experimental study. Briefly describe how to avoid these problems. (12%)

(a) Low compliance

(b) Lack of baseline comparability

(c) Biased information on the outcome

5. The investigator plans a cohort study. The study question is: "Does vitamin B₁₂ deficiency cause hip fractures in the elderly?" (18%)

(a) Briefly describe a study plan to address this study with a prospective cohort study.

(b) Please list advantages and disadvantages of the prospective cohort study.

(c) What is a major problem resulting from the lack of randomization in a cohort study?

6. The investigator plans a case-control study. The study question is: "How much does a family history of ovarian cancer increase the risk for ovarian cancer?" (18%)

(a) Briefly describe a study plan to address this study.

(b) Comment on potential sources of bias in the sampling of cases and controls.

(c) Do you think the case-control method is an appropriate approach to this study? Discuss the advantages and disadvantages of the case-control design relative to other designs for this study question.

7. A randomized controlled trial compares angioplasty with fibrinolysis for treatment of acute myocardial infarction. The authors state that "analysis was by intention to treat".

(a) What is intention to treat analysis in randomized trials? (4%)

(b) Why use intention to treat analysis? (4%)

8. The association between heavy smoking consumption and the risk of oral cancer was investigated in a case-control study with 475 cases and 400 controls. The following results were seen: (10%)

<u>Heavy Smoking Consumption</u>	<u>Cases</u>	<u>Controls</u>
Yes	350	200
No	125	200
Total	475	400

The crude odds ratio (OR) = 2.8

Gender was considered a potential confounder and/or effect measure modifier in this study. The data stratified into males and females in order to assess these issues.

The stratum-specific odds ratios among males and females are as follows:

<u>Heavy Smoking Consumption</u>	<u>Males (OR=2)</u>		<u>Females (OR=2)</u>	
	<u>Cases</u>	<u>Controls</u>	<u>Cases</u>	<u>Controls</u>
Yes	300	150	50	50
No	50	50	75	150

- (a) Is gender a confounder in this study?
- (b) Is gender an effect measure modifier in this study?
- (c) Briefly explain your answers to parts (a) and (b).