※ 考生請注意：本試題 ☑可 □不可 使用計算機

1. Please explain the following terms: (5 pt each)

   a). Odds

   b). Incidence density sampling

   c). Coefficient of variation

   d). Unnecessary matching

   e). SMR (standardized mortality ratio)

   f). α level

2. What is F distribution? F test? (10 pt)

3. Simple linear regression model is said to be simple, linear in the parameters, and linear in the independent variables. Please explain what "linear in the independent variables" is. (10 pt)

4. What is effect modification? Please provide an example. (15 pt)

5. Please define the confounding variable. (5 pt) If the confounding variable is difficult to measure, what is the best way, in term of study design, to handle it? (5 pt)

6. To conduct a case-control study, it can be easy and difficult. The easy part is that it can be done quickly and you have access to the patients with disease of your research interest. The difficulty comes in when you have to decide which patient can be included in your study and how to find an appropriate control group. Please identify the principles for the selection of cases and controls for your study. (15 pt)

7. In a case-control study, a test with 100% sensitivity means this test correctly labels all 140 cases with true toxin serum level ≧180 mg/mL as positive for serum level ≧180 mg/mL and 80 controls with true toxin serum level ≧180 mg/mL as positive for serum level ≧180 mg/mL. The result is shown in the following table:

	Case	Control
Toxin serum level ≧180 mg/mL Test (+)	140	80
Toxin serum level ≦180 mg/mL		
Total	180	360

   If sensitivity of the test becomes 80% for case group and 90% for control group, what kind of misclassification in the exposure assessment can happen? (4 pt) How can it affect the study result? Please provide your own 2 x 2 table. (6 pt)