

# 臺北醫學大學九十學年度研究所碩士班招生考試題目卷

科目：流行病學(含生物統計學)

九十學年度研究所碩士班招生筆試

所別：傷防

考科：流行病學

題目試卷共 3 張，本試卷為第 / 張

In this exam, you have 90 minutes to complete the following 25 questions. Each question counts 4 points. Please record your answers on answer sheet and no credit will be given for answers written in this booklet. Carry your calculations to 3 decimal points; for instance, 1.256867 should be rounded to be 1.257 and 1.12145 should be rounded to be 1.121. Good luck!

1. Epidemiology is the study of (1) the distribution (2) the determinants (3) the burden (4) both of (1) and (2) (5) none of the above, of disease or injury among human population.
2. Incidence is a measure of (1) risk of disease (2) severity of disease (3) burden of disease (4) both of (1) and (2) (5) both of (1) and (3)
3. Prevalence is a measure of (1) risk of disease (2) severity of disease (3) burden of disease (4) both of (1) and (2) (5) both of (2) and (3)
4. If you were right-handed, and unfortunately lost your right arm in a motor vehicle crash. Your doctor was trying to make you use left hand to write a letter. He was doing for (1) primary prevention (2) secondary prevention (3) tertiary prevention (4) all of the above (5) no prevention
5. A screening program for cervical cancer is doing for (1) primary prevention (2) secondary prevention (3) tertiary prevention (4) all of the above (5) no prevention
6. A mother got a flu, and unfortunately her children were infected by her flu virus. This is a transmission of (1) horizontal common vehicle (2) horizontal contact (3) horizontal vector (4) vertical (5) none of the above
7. A case-control study is characterized by all of the following **except**:  
(1) it is relatively inexpensive compared to most other epidemiological study designs  
(2) cases with the disease are compared to controls without the disease  
(3) incidence rates may be computed directly  
(4) assessment of past exposure may be biased  
(5) definition of cases may be difficult
8. A small town, which has 1,000 population, has been found by a screening program to have 200 diabetes mellitus (DM) in 1997. Of these 200 DMs, 30 persons have been diagnosed during the period of 1997.
  - a. The incidence rate of DM in the town in 1997?
  - b. The prevalence rate of DM in the town in 1997?
9. Case-fatality rate is a measure of (1) risk of disease (2) severity of disease (3) burden of disease (4) both (2) and (3) (5) none of the above

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考試時間：90分鐘

題目試卷共 3 張，本試卷為第 2 張

10.

| Age group<br>(years) | Community A |            | Community B |            |
|----------------------|-------------|------------|-------------|------------|
|                      | Deaths      | Population | Deaths      | Population |
| under 1              | 15          | 1,000      | 100         | 5,000      |
| 1~14                 | 3           | 3,000      | 10          | 20,000     |
| 15~34                | 6           | 6,000      | 35          | 35,000     |
| 35~54                | 52          | 13,000     | 85          | 17,000     |
| 55~64                | 105         | 7,000      | 160         | 8,000      |
| over 64              | 1600        | 20,000     | 1,350       | 15,000     |

Before crude mortality rates between community A and B are compared with, you are smart enough to know that age needs to be adjusted by direct adjustment method. Assume that standard population is a combination of community A and community B.

a. Age-adjusted rate in community A?

b. Age-adjusted rate in community B?

c. If indirect adjustment method is applied, and the SMR (standardized mortality ratio) for community A is ?

11. A new test is developed to detect diabetes mellitus (DM). The result of screening DM is showed in the following table.

| True diagnosis        | Test result |          |
|-----------------------|-------------|----------|
|                       | Positive    | Negative |
| Diabetic mellitus     | 66          | 84       |
| Non-diabetic-mellitus | 98          | 9,752    |

a. Sensitivity = (1)  $\frac{66}{164}$  (2)  $\frac{66}{150}$  (3)  $\frac{66}{10000}$  (4)  $\frac{84}{164}$  (5)  $\frac{84}{150}$

b. Specificity = (1)  $\frac{9752}{9850}$  (2)  $\frac{9752}{9836}$  (3)  $\frac{9752}{10000}$  (4)  $\frac{98}{9850}$  (5)  $\frac{98}{9836}$

c. Positive predictive value = (1)  $\frac{66}{164}$  (2)  $\frac{66}{150}$  (3)  $\frac{84}{164}$  (4)  $\frac{84}{150}$  (5)  $\frac{98}{164}$

12. To continue Question 11, a better diagnosis test is applied to the positive cases in the above test. The result is showed in the following table.

| True diagnosis        | Test result |          |
|-----------------------|-------------|----------|
|                       | Positive    | Negative |
| Diabetic mellitus     | 60          | 6        |
| Non-diabetic-mellitus | 23          | 75       |

a. Net sensitivity in the two tests = (1)  $\frac{60}{69}$  (2)  $\frac{60}{66}$  (3)  $\frac{60}{150}$  (4)  $\frac{60}{164}$  (5) none of the above

b. Net specificity in the two tests = (1)  $\frac{9827}{9850}$  (2)  $\frac{9677}{9850}$  (3)  $\frac{9827}{9836}$  (4)  $\frac{9677}{9836}$  (5) none of the above

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13.

| Time at beginning of interval x (years) | Number of patients | Deaths |
|-----------------------------------------|--------------------|--------|
| 1                                       | 300                | 193    |
| 2                                       | 101                | 25     |
| 3                                       | 68                 | 12     |
| 4                                       | 46                 | 8      |
| 5                                       | 28                 | 4      |
| 6                                       | 14                 | 3      |

- a. The probability of patients who have survived 2 years and can survive up to 5 years?
- b. The median survival time is (1) in the 1st year (2) in the 2nd year (3) in the 3rd year (4) in the 4th year (5) in the 5th year
14. One physician has observed that 100% of his patients with lung cancer smoke cigarettes. Therefore, he concludes that cigarette smoking should cause lung cancer.  
(1) Yes, he is right (2) No, his study has no a comparison group (3) No, his study does not randomize his patients (4) No, his study is a case-series study (5) all of (2), (3) and (4)
15. Randomization is a process to increase comparability of (1) recognized and measured variables (2) unrecognized variables (3) unmeasured variables (4) All of the above (5) both of (1) and (2)
16. Sample size of study is dependent on (1) Type I error (2) Type II error (3) one sided or two sided (4) all of the above three (5) both (2) and (3)
17. The difference(s) between randomized trials and cohort studies is/are (1) the process of randomization (2) control of unmeasured variables (3) outcome assessment (4) both (1) and (2) (5) both (1) and (3)
18. What kind of condition(s) would you like to conduct a cohort study? (1) a lot of losses in the follow-up period (2) a long interval between exposure and disease (3) low incidence of the disease (4) all of the above (5) none of the above