

東吳大學 105 學年度碩士班研究生招生考試試題

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| 系級 | 企業管理學系碩士班 B 組 | 考試時間 | 100 分鐘 |
| 科目 | 統計學 | 本科總分 | 100 分 |

一、 選擇題 (每題 4 分，共計 60 分)

- (1) If events X and Y are mutually exclusive and collectively exhaustive, what is the probability that event X occurs?
 (A) 0 (B) 0.5 (C) 1 (D) Cannot be determined from the information given.

- (2) If two events X and Y are independent, what is the probability that they both occur?
 (A) 0 (B) 0.5 (C) 1 (D) Cannot be determined from the information given.

- (3) If either event X or event Y must occur, then events X and Y are said to be
 (A) mutually exclusive. (B) independent. (C) collectively exhaustive. (D) None of the above.

- (4) Which of the following about the binomial distribution is **not** a true statement?
 (A) The probability of the event of interest must be constant from trial to trial.
 (B) Each outcome is independent of the other.
 (C) Each outcome may be classified as either "event of interest" or "not event of interest."
 (D) The results of one trial are dependent on the results of the other trials.

- (5) If the outcomes of a variable follow a Poisson distribution, then their
 (A) mean equals the standard deviation.
 (B) median equals the standard deviation.
 (C) mean equals the variance.
 (D) standard deviation equals the variance.

- (6) The Central Limit Theorem is important in statistics because
 (A) for a large n, it says the population is approximately normal.
 (B) for any population, it says the sampling distribution of the sample mean is approximately normal, regardless of the sample size.
 (C) for a large n, it says the sampling distribution of the sample mean is approximately normal, regardless of the shape of the population.
 (D) for any sized sample, it says the sampling distribution of the sample mean is approximately normal.

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- (7) The value of the cumulative standardized normal distribution at Z is 0.209. The value of Z is
 (A) -0.18 (B) -0.81 (C) 0.32 (D) 1.03
- (8) The distribution of the number of loaves of bread sold per week by a large bakery over the past 5 years has a mean of 7,750 and a standard deviation of 145 loaves. Suppose a random sample of $n = 40$ weeks has been selected. What is the approximate probability that the mean number of loaves sold in the sampled weeks exceeds 7,895 loaves?
 (A) 0 (B) 0.21 (C) 0.5 (D) 1
- (9) A Type I error is committed when
 (A) you don't reject a null hypothesis that is true.
 (B) you reject a null hypothesis that is true.
 (C) you reject a null hypothesis that is false.
 (D) you don't reject a null hypothesis that is false.
- (10) The power of a test is measured by its capability of
 (A) rejecting a null hypothesis that is true.
 (B) not rejecting a null hypothesis that is true.
 (C) rejecting a null hypothesis that is false.
 (D) not rejecting a null hypothesis that is false.
- (11) If we are testing for the difference between the means of 2 independent populations presuming equal variances with samples of $n_1 = 20$ and $n_2 = 20$, the number of degrees of freedom is equal to
 (A) 2. (B) 18. (C) 38. (D) 42.
- (12) In a one-way ANOVA, if the computed F statistic is greater than the critical F value you may
 (A) reject H_0 since there is evidence all the means differ.
 (B) reject H_0 since there is evidence that not all the means are different.
 (C) not reject H_0 since there is no evidence of a difference in the means.
 (D) not reject H_0 because a mistake has been made.

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(13) A candy bar manufacturer is interested in trying to estimate how sales are influenced by the price of their product. To do this, the company randomly chooses 6 small cities and offers the candy bar at different prices. Using candy bar sales as the dependent variable, the company will conduct a simple linear regression on the data below:

| City | Price (\$) | Sales |
|------|------------|-------|
| A | 1.30 | 100 |
| B | 1.60 | 90 |
| C | 1.80 | 90 |
| D | 2.00 | 40 |
| E | 2.40 | 38 |
| F | 2.90 | 32 |

what is the estimated slope for the candy bar price and sales data?

- (A) -16.368 (B) -0.784 (C) -3.810 (D) -48.193

(14) In multiple regression, the _____ procedure permits variables to enter and leave the model at different stages of its development.

- (A) forward selection
 (B) residual analysis
 (C) backward elimination
 (D) stepwise regression

(15) The Variance Inflationary Factor (VIF) measures the

- (A) correlation of the X variables with each other.
 (B) correlation of the X variables with the Y variable.
 (C) contribution of each X variable with the Y variable after all other X variables are included in the model.
 (D) standard deviation of the slope.

