

編號: G 119 系所: 資源工程學系丙組

科目: 統計學

本試題是否可以使用計算機: 可使用, 不可使用 (請命題老師勾選)

單選題 (第 1~20 題, 每題 3 分, 21~30 題每題 4 分, 共 100 分)

1. Some hotels ask their guests to rate the hotel's services as excellent, very good, good, and poor. This is an example of the
 - a. ordinal scale
 - b. ratio scale
 - c. nominal scale
 - d. interval scale
2. The interquartile range is
 - a. the 50th percentile
 - b. another name for the variance
 - c. the difference between the largest and smallest values
 - d. the difference between the third quartile and the first quartile
3. If $P(A) = 0.4$, $P(B|A) = 0.35$, $P(A \cup B) = 0.69$, then $P(B) =$
 - a. 0.14
 - b. 0.43
 - c. 0.75
 - d. 0.59
4. If two events are independent, then
 - a. they must be mutually exclusive
 - b. the sum of their probabilities must be equal to one
 - c. their intersection must be zero
 - d. None of these alternatives is correct.
5. If A and B are independent events with $P(A) = 0.38$ and $P(B) = 0.55$, then $P(A|B) =$
 - a. 0.209
 - b. 0.000
 - c. 0.550
 - d. 0.38
6. For a uniform probability density function,
 - a. the height of the function can not be larger than one
 - b. the height of the function is the same for each value of x
 - c. the height of the function is different for various values of x
 - d. the height of the function decreases as x increases
7. A sample statistic is an unbiased estimator of the population parameter if
 - a. the expected value of the sample statistic is equal to zero
 - b. the expected value of the sample statistic is equal to one
 - c. the expected value of the sample statistic is equal to the population parameter
 - d. it is equal to zero
8. Which of the following is(are) point estimator(s)?
 - a. σ
 - b. μ
 - c. s
 - d. α
9. The following data was collected from a simple random sample of a population.

13	15	14	16	12
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The point estimate of the population standard deviation is

 - a. 2.500
 - b. 1.581
 - c. 2.000
 - d. 1.414
10. A population has a mean of 150 and a standard deviation of 30. A random sample of 100 from this population is selected. The sample has a mean of 145 and a standard deviation of 33. The sampling error is
 - a. 5
 - b. 50
 - c. 45
 - d. 120
11. For the interval estimation of μ when σ is known and the sample is large, the proper distribution to use is
 - a. the normal distribution
 - b. the t distribution with n degrees of freedom
 - c. the t distribution with n - 1 degrees of freedom
 - d. the t distribution with n - 2 degrees of freedom

(背面仍有題目, 請繼續作答)

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12. From a population that is normally distributed, a sample of 25 elements is selected and the standard deviation of the sample is computed. For the interval estimation of μ , the proper distribution to use is the
- normal distribution
 - t distribution
 - t distribution with 26 degrees of freedom
 - t distribution with 24 degrees of freedom
13. Whenever using the t distribution in estimation, we must assume that
- the sample size is at least 30
 - the sampling distribution is approximately normal
 - the population is approximately normal
 - the finite population correction factor is necessary
14. When the following hypotheses are being tested at a level of significance of α
- $H_0: \mu \geq 100$
 $H_a: \mu < 100$
the null hypothesis will be rejected if the test statistic Z is
- $> Z_{\alpha}$
 - $> Z_{\alpha/2}$
 - $< -Z_{\alpha}$
 - < 100
15. When the p-value is used for hypothesis testing, the null hypothesis is rejected if
- p-value $< \alpha$
 - $\alpha < \text{p-value}$
 - p-value $> \alpha$
 - p-value = α
16. Your investment executive claims that the average yearly rate of return on the stocks she recommends is at least 10.0%. You plan on taking a sample to test her claim. The correct set of hypotheses is
- $H_0: \mu < 10.0\%$ $H_a: \mu \geq 10.0\%$
 - $H_0: \mu \leq 10.0\%$ $H_a: \mu > 10.0\%$
 - $H_0: \mu > 10.0\%$ $H_a: \mu \leq 10.0\%$
 - $H_0: \mu \geq 10.0\%$ $H_a: \mu < 10.0\%$
17. $n = 36$ $\bar{X} = 24.6$ $S = 12$ $H_0: \mu \leq 20$
 $H_a: \mu > 20$ The standardized test statistic equals
- 2.3
 - 0.38
 - 2.3
 - 0.38
18. If a hypothesis is not rejected at the 5% level of significance, it
- will also not be rejected at the 1% level
 - will always be rejected at the 1% level
 - will sometimes be rejected at the 1% level
 - None of these alternatives is correct.
19. For a one-tailed hypothesis test (upper tail) the p-value is computed to be 0.034. If the test is being conducted at 95% confidence, the null hypothesis
- could be rejected or not rejected depending on the sample size
 - could be rejected or not rejected depending on the value of the mean of the sample
 - is not rejected
 - is rejected
20. An estimate of the variance of a population based on the combination of two sample results is known as the
- pooled standard deviation
 - matched variance
 - pooled variance estimate
 - None of these alternatives is correct.
21. To construct an interval estimate for the difference between the means of two populations which are normally distributed and have equal variances, we must use a t distribution with (let n_1 be the size of sample 1 and n_2 the size of sample 2)
- $(n_1 + n_2)$ degrees of freedom
 - $(n_1 + n_2 - 1)$ degrees of freedom
 - $(n_1 + n_2 - 2)$ degrees of freedom
 - $n_1 - n_2 + 2$

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22. Salary information for a random sample of male and female employees of a large company is shown below.

	Male	Female
Sample Size	64	36
Sample Mean Salary (in \$1,000)	44	41
Sample Variance	128	72

The point estimate of the difference between the means of the two populations is

- a. -28
b. 3
c. 4
d. -4
23. Refer to last problem's data. If you are interested in testing whether or not the average salary of males is significantly greater than that of females, the test statistic is
- a. 2.0
b. 1.5
c. 1.96
d. 1.645
24. Independent samples are obtained from two normal populations with equal variances in order to construct a confidence interval estimate for the difference between the population means. If the first sample contains 16 items and the second sample contains 36 items, the correct form to use for the sampling distribution is the
- a. normal distribution
b. t distribution with 15 degrees of freedom
c. t distribution with 35 degrees of freedom
d. t distribution with 50 degrees of freedom

Exhibit A

You want to test whether or not the following sample of 30 observations follows a normal distribution. The mean of the sample equals 11.83, and the standard deviation equals 4.53.

2	3	5	5	7	8	8	9	9	10
11	11	12	12	12	12	13	13	13	14
15	15	15	16	16	17	17	18	18	19

25. Refer to Exhibit A. The number of intervals or categories used to test the hypothesis for this problem is
- a. 4
b. 5
c. 6
d. 10
26. Refer to Exhibit A. The expected frequency in the 3rd interval is
- a. 3
b. 4
c. 5
d. 10
27. An ANOVA procedure is applied to data obtained from 6 samples where each sample contains 20 observations. The degrees of freedom for the critical value of F are
- a. 6 numerator and 20 denominator degrees of freedom
b. 5 numerator and 20 denominator degrees of freedom
c. 5 numerator and 114 denominator degrees of freedom
d. 6 numerator and 20 denominator degrees of freedom
28. Application of the least squares method results in values of the y intercept and the slope which minimizes the sum of the squared deviations between the
- a. observed values of the independent variable and the estimated values of the independent variable
b. actual values of the independent variable and estimated values of the dependent variable
c. observed values of the dependent variable and the estimated values of the dependent variable
d. None of these alternatives is correct.
29. In a regression model involving more than one independent variable, which of the following tests must be used in order to determine if the relationship between the dependent variable and the set of independent variables is significant?
- a. t test
b. F test
c. Either a t test or a chi-square test can be used.
d. chi-square test
30. The coefficient of correlation
- a. is the square of the coefficient of determination
b. is the square root of the coefficient of determination
c. is the same as r-square
d. can never be negative