

※ 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。

一、單選題：(80%)：每題 4 分，答錯倒扣 1.5 分

1. In a questionnaire, respondents are asked to mark their gender as male or female. Gender is an example of the:
 - (a) ordinal scale
 - (b) nominal scale
 - (c) ratio scale
 - (d) interval scale
2. The summaries of data, which may be tabular, graphical, or numerical, are referred to as
 - (a) inferential statistics
 - (b) descriptive statistics
 - (c) statistical inference
 - (d) report generation
3. In a cumulative frequency distribution, the last class will always have a cumulative frequency equal to
 - (a) one
 - (b) 100%
 - (c) the total number of elements in the data set
 - (d) None of these alternatives is correct.
4. A histogram is said to be skewed to the left if it has a
 - (a) longer tail to the right
 - (b) shorter tail to the right
 - (c) shorter tail to the left
 - (d) longer tail to the left
5. Geometric mean is a measure of:
 - (a) location
 - (b) dispersion
 - (c) variability
 - (d) weight of items, when arranged in descending order
6. For descriptive statistics, the measure of location which is the most likely to be influenced by extreme values in the data set is the
 - (a) range
 - (b) median
 - (c) mode
 - (d) mean

7. The hourly wages of a sample of 130 system analysts are given below.
mean = 60 range = 20 mode = 73 variance = 324 median = 74
The coefficient of variation equals
- (a) 0.30%
(b) 30%
(c) 5.4%
(d) 54%
8. From a group of six people, two individuals are to be selected at random. How many possible selections are possible?
- (a) 12
(b) 36
(c) 15
(d) 8
9. Events that have no sample points in common are
- (a) independent events
(b) posterior events
(c) mutually exclusive events
(d) complements
10. 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
11. If A and B are independent events with $P(A) = 0.35$ and $P(B) = 0.20$, then, $P(A \cup B) =$
- (a) 0.07
(b) 0.62
(c) 0.55
(d) 0.48
12. Consider a binomial probability experiment with $n = 3$ and $p = 0.1$. Then, the probability of $x = 0$ is
- (a) 0.0000
(b) 0.0001
(c) 0.001
(d) 0.729

13. The random variable x is known to be uniformly distributed between 70 and 90. The probability of x having a value between 80 to 95 is
- (a) 0.75
 - (b) 0.5
 - (c) 0.05
 - (d) 1
14. Whenever the population standard deviation is unknown and the population has a normal or near-normal distribution, which distribution is used in developing an interval estimation?
- (a) standard distribution
 - (b) z distribution
 - (c) alpha distribution
 - (d) t distribution
15. An interval estimate is a range of values used to estimate
- (a) the shape of the population's distribution
 - (b) the sampling distribution
 - (c) a sample statistic
 - (d) a population parameter
16. It is known that the population variance (σ^2) is 144. At 95% confidence, what size sample should be taken so that the margin of error is does not exceed 5 or less?
- (a) 22
 - (b) 23
 - (c) 24
 - (d) 25
17. The sum of the values of α (Type I error) and β (Type II error)
- (a) always add up to 1.0
 - (b) always add up to 0.5
 - (c) is the probability of Type II error
 - (d) none of these alternatives is correct
18. In hypothesis testing,
- (a) the smaller the Type I error, the smaller the Type II error will be
 - (b) the smaller the Type I error, the larger the Type II error will be
 - (c) Type II error will not be effected by Type I error
 - (d) the sum of Type I and Ttype II errors must equal to 1

19. The level of significance in hypothesis testing is the probability of
- (a) accepting a true null hypothesis
 - (b) accepting a false null hypothesis
 - (c) rejecting a true null hypothesis
 - (d) None of these alternatives is correct.
20. To compute an interval estimate for the difference between the means of two populations, the t distribution
- (a) is restricted to small sample situations
 - (b) is not restricted to small sample situations
 - (c) can be applied when the populations have equal means
 - (d) None of these alternatives is correct.

二、問答題 (20%，需列出計算式)

1. (12%，每小題4分) In order to estimate the average time spent on the computer terminals per student at a local university, data were collected for a sample of 81 business students over a one-week period. Assume the population standard deviation is 1.8 hours.
- (a) What is value of the standard error of the mean?
 - (b) With a 0.95 probability, what is the approximate value of the margin of error?
 - (c) If the sample mean is 9 hours, then what is the 95% confidence interval?
2. (8%，每小題4分) Give that sample size $(n)=36$, sample mean $(\bar{x})=24.6$, sample standard deviation $(s)=12$, and $H_0: \mu \leq 20$, $H_a: \mu > 20$. Answer the following questions.
- (a) What is the test statistic?
 - (b) If the test is done at 95% confidence, what is the result of the hypothesis test?