Testing Hypothesis : one sample test (Statistics for Management., Richard I. Levin., David S. Rubin., Prentice Hall ., Seventh Edition., p. 446-449)

A. True or False

1. In hypothesis testing, we assume that some population parameter takes on particular value before we sample. This assumption to be tested is called an alternative hypothesis (False- null hypothesis)
2. Assuming that a given hypothesis about a population mean is correct, the percentage of sample means that could fall ouside certain limits from this hypothesis mean is called the significant level (True)
3. In hypothesis testing, the appropriate probability distribution to use is always the normal distribution (False – only if σ is known or number of sampel > 30)
4. If we were to make a Type I error, we would rejecting a null hypothesis when it is really true (True)
5. Testing on tha raw scale or the standardized scale will lead to the same conclusion (True)
6. If 1.96 is the critical value of z, then the significance level of these test is 0.05 (false- The significant level 0.025)
7. If our null hypothesis are $H_0 : \mu = 80$ and $H_1: \mu<80$, it is appropriate to use a left tailed test (True)
8. If the standardized sample mean is between zero and the critical value, then you should not reject H_0 (True)
9. The value of 1-β is known as the power of the test (True)
10. After performing a one tailed test and rejecting H_0, you realized you should have done to a two tailed test at the same significance level. You will also reject H_0 for that test (False – depend on sample statistic)
11. It is often, but not always, possible to set the value of α so that we obtain a risk free trade off in hypothesis testing (False- When we use statistic sample for accepting/ rejecting hypothesis about population is always a risk)
12. You are performing a two tailed hypothesis test on a population mean and have set $\alpha = 0.05$. If the sample statistic fall between the 0.95 area around μ, you have proved that the null hypothesis is true (False – Do not reject null hypothesis)
13. If hypothesis tests were done with a significance level of 0.60, the null hypothesis would usually be accepted when it is not true (False- Not usually because we need information about statistic sample)
14. For a given level of significance, the critical values of t get closer to zero as sample size increases (True)
15. Hypothesis testing helps us to draw conclusion about estimated parameters (True)

CHOOSE THE RIGHT ANSWER

16. A major automobile manufacturer has had to recall several models from 1993 line due to quality control problems that were not discovered with its random final inspection procedures. This is an example of,
    a. Type I error
    b. Type II error
    c. Both type I and type II error
    d. Neither Type I and type II error

    The answer (b)

17. If n = 24 and α = 0.05, then the critical value of t for testing the hypothesis H0 : μ = 38 and H1 : μ < 38 is,
    a. 2.069
    b. 1.714
    c. -1.714
    d. -2.069

    The answer (c)

18. To test hypothesis about the mean of a normal population with a known standard deviation, we can compare,
    a. The observed value of $\bar{x}$ with the critical value of $\bar{x}$
    b. The observed value of $\bar{x}$ with the critical value of z
    c. The observed value of z with the critical value of $\bar{x}$
    d. The observed value of z with the critical value of z
    e. Either (a) or (d)

    The answer (e)

19. If we say that α = 0.10 for a particular hypothesis test, we are saying that,
    a. Ten percent is our minimum standard for acceptable probability
    b. Ten percent is the risk we take of rejecting a hypothesis that is true
    c. Ten percent is the risk we take of accepting a hypothesis that is false
    d. (a) and (b) only
    e. (a) and (c) only

    The answer (d)

20. Suppose we wish to test whether a population mean is significally larger or smaller than 10. We take a sample and find $\bar{x}$ = 8, what should our alternative hypothesis be ?
    a. μ < 10
    b. μ ≠ 10
    c. μ > 10
    d. Cannot be determines from the information given

    The answer (b)

21. Suppose that a hypothesis test is being performed for a process in which a type I error will be very costly, but a type II error will be relatively inexpensive and unimportant. Which of the following would be the best choice for α in this test
    a. 0.01
    b. 0.10
    c. 0.25
    d. 0.50
    e. None of these
    The answer (a)

22. When using the sample proportion, p, to test the hypothesis $H_0 : \pi = \pi_1$ and $H_1 : \pi \neq \pi_1$, the standatrd error of p is,
    a. $\sqrt{p(1-p)/n}$
    b. $p(1-p)/n$
    c. $\sqrt{\pi_1 (1-\pi_1)/n}$
    d. $\pi_1 (1-\pi_1)/n$
    e. None of these
    The answer (c)

23. For a particular test α = 0.05, and β = 0.10. The power of this test is,
    a. 0.15
    b. 0.90
    c. 0.85
    d. 0.95
    e. 0.25
    f. None of these
    The answer (b)

24. For a two tail test of hypothesis at α = 0.10, the acceptance region is the entire region
    a. To the right of the negative critical value
    b. Between the two critical value
    c. Outside of the two critical value
    d. To the left of the positive critical value
    The answer (b)

25. The normal distribution is the appropriate distribution to use in testing hypothesis about
    a. A proportion when $n\,\pi > 5$ and $n(1-\pi) > 5$
    b. A mean, when σ is known and the population is normal
    c. A mean, when σ is unknown but n is large
    d. All of the above
    The answer (d)

26. When the null hypothesis is accepted, it is possible that
    a. A correct decision has been made
    b. A type I error has been made
    c. Both (a) and (b) have occurred
    d. Neither (a) nor (b) has occurred
    e. None of these
    The answer (a)

27. When the null hypothesis is $H_0 : \mu = 42$, the alternative hypothesis can be
    a. $H_1 : \mu \geq 42$
    b. $H_1 : \mu < 42$
    c. $H_1 : \mu = 40$
    d. $H_1 : \mu \neq 40$
    The answer (b)

28. With a lower siginificance level, the probability of rejecting a null hypothesis that is actually true,
    a. Decreases
    b. Remains the same
    c. Increases
    d. All of these
    The answer (a)

29. Decision makers make decision on the appropriate significance level by examining the cost of
    a. Performing the test
    b. A type I error
    c. A type II error
    d. (a) and (b)
    e. (a) and (c)
    f. (b) and (c)
    The answer (f)