Test 2 Practice 2

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) It is assumed that the time failures for an electronic component are exponentially distributed with a mean of 50 hours. Based on this information, what is the probability that a randomly selected part will fail in less than 10 hours? 1) _____
A) 0.3323 B) About 0.82
C) Approximately 0.20 D) About 0.18

2) Suppose it is known that the income distribution in a particular region is right-skewed and bi-modal. If bank economists are interested in estimating the mean income, which of the following is true? 2) _____

A) The standard deviation of the sampling distribution for $\bar{x}$ will be proportionally larger than the population standard deviation, depending on the size of the sample.

B) Provided that the sample size is sufficiently large, the sampling distribution for $\bar{x}$ will be approximately normal with a mean equal to the population mean that they wish to estimate.
C) The sampling distribution will also be right-skewed for large sample sizes.
D) None of the above.

3) The general format for a confidence interval is: 3) _____
A) margin of error ± (confidence coefficient)(standard error).
B) point estimate ± z (Standard Deviation).
C) point estimate ± (critical value)(standard error).
D) None of the above.

4) A soft drink company has a filling machine that can be set at different levels to produce different average fill amounts. The company sets the machine to provide a mean fill of 12 ounces. The standard deviation on the machine is known to be 0.20 ounces. Assuming that the hypothesis test is to be performed using a random sample of n = 100 cans, which of the following would be the upper tail critical value? 4) _____
A) Nearly 12.04 ounces
B) About 12.56 ounces
C) Approximately 12.12 ounces
D) Can't be determined without knowing the significance level.

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

5) The weight of sacks of potatoes is normally distributed with a mean of 20 pounds and a standard deviation of 2 pounds. The weight of sacks of onions is also normally distributed with a mean of 20 pounds and a standard deviation of 0.50 pounds. Based on this information, which product will yield the highest probability of getting a very heavy sack? 5) _____

6) Suppose it is known that the ages of all employees working for a very large computer

company is normally distributed with a mean of 44.2 and a standard deviation of 5.6 years. Given this information, discuss what the sampling distribution for $\bar{x}$ looks like? 6) _____

7) Under what circumstances would you wish to select a pilot sample? 7) _____

8) The Gordon Beverage Company bottles soft drinks using an automatic filling machine. When the process is running properly, the mean fill is 12 ounces per can. The machine has a known standard deviation of 0.20 ounces. Each day, the company selects a random sample of 36 cans and measures the volume in each can. They then test to determine whether the filling process is working properly. The test is conducted using a 0.05 significance level. What is the critical value in ounces? 8) _____

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

9) If the mean, median and mode are all equal for a continuous random variable, then the random variable is normally distributed. 9) _____

10) The population of soft drink cans filled by a particular machine is known to be normally distributed with a mean equal to 12 ounces and a standard deviation equal to 0.25 ounces. Given this information, the sampling distribution for a random sample of n = 25 cans will also be normally distributed with a mean equal to $\frac{12}{\sqrt{25}}$ ounces. 10) _____

11) The product manager for a large retail store has recently stated that she estimates that the average purchase per visit for the store's customers is between $33.00 and $65.00. The $33.00 and the $65.00 are considered point estimates for the true population mean. 11) _____

12) The Adams Shoe Company believes that the mean size for men's shoes is now more than 10 inches. To test this, they have selected a random sample of n = 100 men. Assuming that the test is to be conducted using a 0.05 level of significance, a p-value of 0.07 would lead the company to conclude that their belief is correct. 12) _____

13) An Internet service provider is interested in estimating the proportion of homes in a particular community that have computers but do not already have Internet access. To do this, the company has selected a random sample of n = 200 homes and made calls. A total of 188 homes responded to the survey question with 38 saying that they had a computer with no Internet access. The 95 percent confidence interval estimate for the true population proportion is approximately $0.1447 \text{ --- } 0.2595$. 13) _____