**Q1) What is a confidence interval?**

1. The range of values that is likely to contain the population parameter with a certain degree of confidence.
2. The probability of obtaining a sample statistic
3. The margin of error in the estimation of the population parameter
4. The degree of uncertainty in the population parameter estimation

**Q2) Which distribution is used for the chi-square test?**

1. Normal distribution
2. Student's t-distribution
3. F-distribution
4. Chi-square distribution

**Q3) What is the chi-square test used for?**

1. Testing the significance of the difference between two population means
2. Testing the significance of the difference between two population proportions
3. Testing the goodness of fit of a sample distribution to a theoretical distribution.
4. Testing the independence of two categorical variables

**Q4) Which of the following is true about the chi-square distribution?**

1. It is a symmetric distribution.
2. It has a mean of zero.
3. It has only one parameter, the degrees of freedom
4. It is a continuous distribution.

**Q5) When should you use the normal distribution?**

1. When the sample size is large, and the population standard deviation is known.
2. When the sample size is small, and the population standard deviation is known.
3. When the sample size is large, and the population standard deviation is unknown.
4. When the sample size is small, and the population standard deviation is unknown.

**Q6) A confidence interval for a population means with a sample size of 50 and a confidence level of 95% is calculated to be (24.6, 28.2). What is the margin of error for this interval?**

1. 1.8
2. 2.3
3. 2.8
4. 3.4

**Q7) A chi-square test is conducted to test the goodness of fit of a sample distribution to a theoretical distribution. The calculated chi-square statistic is 25.84, with 4 degrees of freedom. At a significance level of 0.05, what is the conclusion?**

1. Reject the null hypothesis.
2. Fail to reject the null hypothesis.
3. Accept the alternative hypothesis.
4. There is not enough information to make a conclusion.

**Q8) A researcher wants to test whether there is a difference in the proportion of males and females who prefer chocolate ice cream. Which statistical test should be used?**

1. Two-sample t-test
2. Chi-square test for goodness of fit
3. Chi-square test for independence
4. One-sample t-test

**Q9) What is the purpose of a confidence level in statistics?**

1. To determine the variability of a dataset
2. To measure the strength of association between two variables
3. To calculate the likelihood of obtaining a sample statistic
4. To estimate the range within which a population parameter is likely to fall.

**Answers:**

**Q1)** The range of values that is likely to contain the population parameter with a certain degree of confidence. (Option A)

**Q2)** Chi-Square distribution. (Option D)

**Q3)** Testing the goodness of fit of a sample distribution to a theoretical distribution. (Option C)

**Q4)** It is a continuous distribution and It has only one parameter, the degree of freedom (Option C and D)

**Q5)** When the sample size is large and the population standard deviation is known. (Option A)

**Q6)** 1.8 (Option A)

Explanation: The margin of error is calculated as half the width of the confidence interval, which is (28.2-24.6)/2 = 1.8. Therefore,

**Q7)** Reject the null hypothesis (Option A)

**Q8)** Chi-square test of independence (Option C)

**Q9)** To estimate the range within which population parameter is likely to fall (Option D)