**Problem Statement 1: Stating Hypotheses**

1. **Correct**: This is a valid two-tailed hypothesis test for the mean population.
2. **Incorrect:** Null hypotheses typically state equality (e.g., σ=10σ = 10σ=10), and inequalities should be part of the alternative hypothesis.
3. **Incorrect:** Hypotheses are defined for population parameters, not sample statistics (x).
4. **Incorrect:** Null and alternative hypotheses must differ by a single condition (e.g., H1: p/0.1).
5. **Incorrect:** Hypotheses are for population parameters (e.g., σ), not sample statistics (s).

**Problem Statement 2: Hypothesis Test for Textbook Cost**

Conclusion: The average cost is likely higher than Rs. 52.

**Problem Statement 3: Hypothesis Test for Pollution**

Conclusion: There is no evidence that the average pollution level has decreased.

**Problem Statement 4: Hypothesis Test for Dental Expenditure**

Conclusion: There is no evidence that the average dental expenditure differs from $1135.

**Problem Statement 5: Hypothesis Test for Family Income**

Conclusion: The average family income is significantly different from $48,432.

**Problem Statement 6: Hypothesis Test for Warehouse Price**

Conclusion: The average price per square foot has significantly changed.

**Problem Statement 8: Compute t-score**

t=5.33

**Problem Statement 9: t-score for 99% Confidence Interval**

±2.947

**Problem Statement 10: Range of t-scores**

0.837

**Problem Statement 11: Two-tailed Test for Means**

Conclusion: The means differ significantly.

**Problem Statement 12: Test for Duracell vs. Energizer Preference**

Conclusion: There is a significant difference in preference between Duracell and Energizer.

**Problem Statement 13: Pooled Estimate of Population Variance**

Conclusion: There is a borderline significant difference in the average percentage increase in price.

**Problem Statement 14: Impact of Price Reduction**

Conclusion: There is no significant evidence that the price reduction increased sales.

**Problem Statement 15: Two-Tailed Test for Population Proportions**

Conclusion: There is a significant difference in the banks’ share of the car loan market.

**Problem Statement 16: One-Tailed Test for Population Proportions**

Conclusion: There is significant evidence to conclude that the proportion of travelers buying at least $2500 in checks with sweepstakes is higher than without sweepstakes.

**Problem Statement 17: Chi-Square Test for Unbiased Die**

Conclusion: The die is not biased.

**Problem Statement 18: Chi-Square Test for Independence**

Conclusion: Based on the result, determine if gender and voting behavior are independent.

**Problem Statement 19: Chi-Square Test for Equal Popularity of Candidates**

Conclusion: The data suggests that the candidates are not equally popular.

**Problem Statement 20: Chi-Square Test for Age and Photograph Preference**

Conclusion: There is a significant relationship between age and photograph preference.

**Problem Statement 21: Chi-Square Test for Conformity Conditions**

Conclusion: There is a significant difference in the frequency of conformity between the "support" and "no support" conditions.

**Problem Statement 22: Chi-Square Test for Height and Leadership Qualities**

Conclusion: There is a significant relationship between height and leadership qualities.

**Problem Statement 23: Chi-Square Test for Labor Force Status and Marital Status**

Conclusion: Based on the result, determine if labor force status and marital status are independent.