Week 3 Assessment

The due date for submitting this assignment has passed. Due on 2021-02-10, 23:59 IST.

As per your records you have not submitted this assignment.

1) It has been found that 2% of the tools produced by certain machine are defective. What is the probability that in a particular shipment of 400 such tools, 3% or more will be defective? [Note: probability that the normal deviate lies between 0 and 1.43 is 0.4236].
   - 0.843
   - 0.076
   - 0.38
   No, the answer is incorrect.
   Score: 0
   Accepted Answers: 0.076

2) The guaranteed average life of a certain type of electric bulbs is 1000 hours with standard deviation of 125 hours. It is proposed to sample the output as to ensure that 90% of the bulbs do not fall short of guaranteed average by more than 2.5%. What should be the minimum size of the sample? [Note: area under normal curve from z = 0 to z = 1.28 is 0.4000]
   - 41 (approx.)
   - 50 (approx.)
   - 100 (approx.)
   No, the answer is incorrect.
   Score: 0
   Accepted Answers: 41 (approx.)

3) A random sample of size 10 was drawn from a normal population with an unknown mean and a variance of 44.1. If the observations are: 65, 71, 80, 76, 78, 82, 68, 72, 65, and 81. Obtain the 95% confidence interval for population mean. [Note: critical value for 95% confidence interval is 1.96]
   - 69.7 to 77.9 inches
   - 50 to 56.6 inches
   - 80.6 to 46 inches
   No, the answer is incorrect.
   Score: 0
   Accepted Answers: 69.7 to 77.9 inches

4) A soap manufacturing company was distributing a particular brand of soap through a large number of retail shops. Before a heavy advertisement campaign, the mean sales per week was 140 dozen. After the campaign, a sample of 26 shops was taken and the mean sales was found to be 147 dozens with standard deviation 16. Perform a statistical test to check the advertisement effectiveness. If the tabulated value of the test statistic (with 25 df) corresponding to upper 5% is 1.738, then what will be your conclusion?
   - Advertisement has been effective in increasing the sales.
   - Advertisement has been ineffective in increasing sales.
   - We do not have enough data to perform statistical test.
   No, the answer is incorrect.
   Score: 0
   Accepted Answers: Advertisement has been effective in increasing the sales.

5) In City A, 100 individuals in a sample of 400 were found to be smokers. In another city say City B, the number of smokers was 300 in a random sample of 800. Based on the given information what can we conclude?
   - Proportion of smoker is higher in city B
   - Proportion of smoker is higher in city A
   - Both cities have equal proportion of smoker
   No, the answer is incorrect.
   Score: 0
   Accepted Answers: Proportion of smoker is higher in city B

6) The numbers of heart attacks suffered by male and female of different age groups in a city is given in following contingency table.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 30</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>30 – 60</td>
<td>50</td>
<td>80</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>30</td>
<td>50</td>
</tr>
</tbody>
</table>

Suppose a researcher tests the hypothesis that age and gender are independent in the occurrence of heart attacks. At 1% level if the tabulated value of the test statistic is 9.21 (with 2 df), then what will the researcher conclude?

- Age is independent of gender in occurrence of heart attacks.
- Male group seems more likely to suffer heart attacks.
- Only senior individuals of both genders seem more likely to suffer heart attacks

No, the answer is incorrect.
Score: 0
Accepted Answers: Age is independent of gender in occurrence of heart attacks.

7) A sample size of 8 from a normal population yields the unbiased estimates of population variance the value 4.4. Obtain the 90% confidence interval for population variance $\sigma^2$.

- $4.1 < \sigma^2 < 9.7$
- $1.52 < \sigma^2 < 31.1$
- $16.56 < \sigma^2 < 95.03$

No, the answer is incorrect.
Score: 0
Accepted Answers: $1.52 < \sigma^2 < 31.1$