One Two academy

Maximum Marks: 45 | Sampling and statistical inference | Duration: 90 minutes

Std 12 Business Mathematics and Statistics

Answer the following questions: **5 x 1 = 5**

1. Any statistical measure computed from sample data is known as
2. A _____ is a statement or an assertion about the population parameter.
3. "A random sample is a sample selected in such a way that every item in the population has an equal chance of being included" - _____
4. State any two merits of simple random sampling.
5. State any two demerits of systematic random sampling.

Answer any four of the following **5 x 2 = 10**

6. Find the sample size for the given standard deviation 10 and the standard error with respect of sample mean is 3.
7. State any two merits of simple random sampling.
8. In a sample of 400 population from a village 230 are found to be eaters of vegetarian items and the rest non-vegetarian items. Compute the standard error assuming that both vegetarian and non-vegetarian foods are equally popular in that village?
9. What is point estimation.
10. A sample of 1000 students whose mean weight is 119 lbs (pounds) from a school in Tamil Nadu State was taken and their average weight was found to be 120 lbs with a standard deviation of 30 lbs. Calculate standard error of mean.
11. What is type I error ?

Answer any four of the following **4 x 3 = 12**

12. The standard deviation of a sample size of 50 is 6.3. Determine the standard error whose population standard deviation is 6.
13. Define (i) standard error (ii) parameter (iii) sample.
14. Explain Lottery method.
15. A die is thrown 9000 times and a throw of 3 or 4 is observed 3240 times. Find the standard error of the proportion for an unbiased die.
16. A sample of 100 students is chosen from a large group of students. The average height of these students is 162 cm and the standard deviation (S.D) is 8 cm. Obtain the standard error for the average height of a large group of students of 16 cm.
17. From the following data, select 68 random samples from the population of heterogenous group with size of 500 though stratisfied random sampling, considering the following categories as strata.

    Category 1: Lower income class – 39%
    Category 2: Middle income class – 38%
    Category 3:Upper income class – 23%

Answer any four of the following **4 x 5 = 20**

18. A sample of 100 measurements at breaking strength of cotton thread gave a mean of 7.4 and a standard deviation of 1.2 gms. Find 95% confidence limits for the mean breaking strength of cotton thread.
19. The mean breaking strength of cables supplied by a manufacturer is 1,800 with a standard deviation 100. By a new technique in the manufacturing process it is claimed that the breaking strength of the cables has increased. In order to test this claim a sample of 50 cables is tested. It is found that the mean breaking strength is 1,850. Can you support the claim at 0.01 level of significance.
20. An ambulance service claims that it takes on the average 8.9 minutes to reach its destination in emergency calls. To check on this claim, the agency which licenses ambulance services has then timed on 50 emergency calls, getting a mean of 9.3 minutes with a standard deviation of 1.6 minutes. What can they conclude at 5% level of significance.
21. The average score on a nationally administered aptitude test was 76 and the corresponding standard deviation was 8. In order to evaluate a state's education system, the scores of 100 of the state's education system, the scores of 100 of the state's students were randomly selected. These students had an average score of 72. Test at a significance level oof 0.05 if there is a significant difference between the state scores and the national scores.
22. A sample of 100 items, draw from a universe with mean value 4 and S.D 3 has a mean value 3.5. Is the difference in the mean significant at 0.05 level significance ?
23. The mean weekly sales of soap bars in departmental stores were 146.3 bars per store. After an advertising campaign the mean weekly sales in 400 stores for typical week increased t 153.7 and showed a standard deviation of 17.2. Was the advertising campaign successful?

All the Best