UNIT - 4

Q73. Mice with an average lifespan of 32 months will live up to 40 months when feed by a certain nutritious food. If 64 mice fed on this diet have an average life span of 38 months and standard deviation of 5.8 months, is there any reason to believe that average life span is less than 40 months.

Q77. The average marks in mathematics of a sample of 100 students was 51 with a S.D of 6 marks. Could this have been a random sample from a population with an average mark of 50?

Q78. The average income of persons was ₹ 210 with a S.D of ₹ 10 in sample of 100 people of a city. For another sample of 150 persons, the average income was ₹ 220 with S.D of ₹ 12. The S.D of incomes of the people of the city was ₹ 11. Test whether there is any significant difference between the average incomes of the localities.

Q79.A coin was tossed 400 times and the head turned up 216 times. Test the hypothesis that the coin is unbiased at 5% level of significance (Ans: hypothesis is accepted, z = 1.6)

Q85. The mean of two large samples of 1000 and 2000 members are 168.75 and 170 cms respectively. Can the samples be regarded as drawn from the same population of S.D 6.25 cms.

Q86. A normal population has a mean 0.1 and S.D 2.1. Find the probability that the mean of simple samples of 900 members will be negative.

Q87. A sample of 100 electric bulbs produced by manufacturer A showed a mean lifetime of 1190 hours and a S.D of 90 hours. A sample of 75 bulbs produced by manufacturer B showed a mean lifetime of 1230 hours with a S.D of 120 hours. Is there a difference between the mean lifetime of two brands at a significance level of (i) 0.05 (ii) 0.01.

Q88. Mean and S.D calculated from the weights in kgs of students of two groups taken from two universities are given below:

	Mean	S. D	Size

University A	55	10	400
University B	57	15	100

Test the significance of the difference between the means at 5% level.

Q89. The mean weight of 50 mail students who showed above average participation in school athletics was 68.2 kgs with a S.D of 2.5 kgs. While 50 male students who showed no interest in such participation had a mean weight of 67.5 kgs with a S.D of 2.8 kgs. Test the hypothesis that male students who participate in school athletics are healthier than other male students.

Q92. The mean produce of rice of a sample of 50 fields is 200 lb. per acre with a S.D of 10 lb. Another sample of 75 fields gives the mean at 220 lb. with a S.D of 12lb. Assuming the standard deviation of the mean field at 11 lb. For the universe, find at 1% level if the two results are consistent.(Ans: i)null hypothesis rejected , ii) null hypothesis accepted)

Q93. Intelligence test of two groups of boys and girls gave the following results :

	Mean	S.D	Size
Girls	84	10	121
Boys	81	12	81

(i) Is the difference in mean scores significant ?

(ii) Is the difference between the standard deviations significant ?(Ans: null hypothesis is accepted in both the cases)

Q94. A die is thrown 9000 times and a throw of 3 or 4 is observed 3240 times. Check whether the die cannot be regarded as an unbiased one and find the limits between which the probability of a throw of 3 or 4 lies. (Ans: null hypothesis is accepted)