Question Bank

Statistical technique-III

Q1) A Sample of 1000 students from a university was taken and their average weight was found to be 112 pounds with a S.D. of 20 pounds. Could the mean weight of students in the population be 120 pounds?

Q2) The Mean life of 10 electric motors was found to be 1450 hrs with S.D. of 423 hrs. A second sample of 17 motors chosen from a different batch showed a mean life of 1280 hrs with a S.D. of 398 hrs.Is there a significant difference between means of the two samples?

Q3) What is $\chi 2$ – test? A die is thrown 90 times with the following results:

Face :	1	2	3	4	5	6	Total
Freq. :	10	12	16	14	18	20	90

Use $\chi 2$ test to test whether these data are consistent with the hypothesis that die is unbiased.

Q4) Examine by any suitable method, whether the nature of area is related to voting preference in the election for which the data are tabulated below:

Votes for Area	A	B	Total
Rural	620	480	1100
Urban	380	520	900
Total	1000	1000	2000

Q5) To test the significance of the variations of the retail prices in the commodity in three principal cities: Mumbai, Bangalore and Chennai, the four shops were chosen at random in each city and prices observed in rupees were as follows:

Mumbai	16	8	12	14
Bangalore	14	10	10	6
Chennai	4	10	8	8

Q6) What are statistical quality control techniques? Discuss the objectives and advantages of statistical quality control.

Q7) Distinguish between the np chart and p chart. Following is the data of defectives of 10 samples of size 100 each. Construct np chart and give your comments.

Sample no. :	1	2	3	4	5	6	7	8	9	10
No. of defectives:	6	9	12	5	12	8	8	16	13	7

Q8) Write a short note on:

(i) Null hypothesis (ii) Alternative hypothesis (iii) Level of significance

Q9) One type of aircraft is found to develop engine trouble in 5 flights out of a total of 100 and another type in 7 flights out of a total of 200 flights. Is there a significant difference in the two types of aircrafts so far as engine defects are concerned?

Q10) Two independent samples of 8 and 7 items respectively had the following values of the variable

Sample 1: 9 11 13 11 15 9 12 14

Sample2: 10 12 10 14 9 8 10

Is the difference between the mean of the sample significant?

Q11) Two random samples are :

Sample	Size	Sum of squares of deviations from the mean
1	10	90
2	12	108

Test whether the samples come from the same normal population at 5% level of significance.

Q12) The theory predicts the proportion of beans in the four groups, G1,G2,G3,G4 should be in the ratio 9:3:3:1. In an experiment with 1600 beans the numbers in the four groups were 882,313,287 and 118. Does the experimental result support the theory?

Q13) For testing the significance of difference between two means, when population variance is not known, how do we find out the statistic z.

Q14) Define (i) Confidence limit (ii) Test statistic.

Q15) When a true null hypothesis is rejected, what is the error made?

Q16) If the average fraction defective of a large sample of a product is 0.1537, calculate the control limits given that sub-group size is 2000.

Q17) Explain one-way ANOVA classification.

Q18) Describe the statistical quality control (SQC).

Q19) A drilling machine bores holes with a mean diameter of 0.5230 cm and a standard deviation of 0.0032 cm. Calculate the 2-sigma and 3-sigma upper and lower control limits for means of sample of 4.

Q20) When the first proof of 392 pages of a book of 1200 pages were read, the distribution of printing mistakes were found to be as follows:

No of mistakes in a page(x): 0 1 2 3 4 5 6

No. of pages(f): 275 72 30 7 5 2 1

Fit a Poisson distribution to the above data and test the goodness of fit.