Pokhara University

Level: Bachelor | Semester - Spring | Year: 2009
Program : BCA | Full Marks: 100
Course: Probability & Statistics | Time: 3 Hrs

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all the questions.

.

1a. What is the procedure for designing a survey? There is inverse relationship between the length of questionnaire and rate of response to the survey. Justify your answer. [7]

b.The following data represents the bounced check fee in dollars for a sample of 23 banks for direct deposit customers who maintain a $100 balance. [8]

26	28	20	20	21	22	25	25	18	25	15	20
	18	20	25	25	22	30	30	15	20	29	30

i. Construct the stem and leaf display from the above data.
ii. What are the two information obtained from stem and leaf display?
iii. What percentage of data are above 25?

2.a. The following data represent the percentage of calories that come from fat for burgers and chicken items from the following sample of fast food chain [8]

Burgers	43	51	48	47	51	50	55	55	59	57
Chicken	60	54	53	57	57	46	45	56	57	

Which item is good and why?

b. The bank is interested in reducing the amount of time people spend waiting to see a personal banker. The bank is interested in the relationship between waiting time in minute (X)and numbers of bankers on duty(Y). What can you conclude from the following sample? [7]

X	2	3	5	4	2	6	1	3	4	3	3	2	4
Y	13	11	3	6	12	3	9	11	8	11	9	13	8

3.a. A recent survey of investors with internet access divided them into two groups, those who trade online and those who do not trade Online. (Traditional traders), and found distinct differences between them.48% of the traditional investors were bullish on the market and 69% of the online investors were bullish on the market. Suppose that the survey was based on equal number of traditional and online investors .An investor is selected at random who is bullish on the market. What is the probability that he is a traditional investor? [7]

b. The manager of large computer network has developed the following probability distribution of the number of interruptions per day. [7]

Interruption per day	0	1	2	3	4	5	6
Probability	0.32	0.35	0.18	0.08	0.04	0.02	0.01

Find the expected number of interruption per day and obtain its variance.

4.a. warranty records so that the probability that a new car needs a warranty repair in the first three months is 0.05.If three car is selected at random what is the probability that in first three month [7]

i. Non needs a warranty repair.
ii. Exactly one needs a warranty repair.
iii. At least one needs a warranty repair

.b. State the conditions of Poisson distribution. An automatic machine makes paper clips from coil of wire on the average 1 in 400 paper clips is defective. If the paper clips are packed in boxes of 100. What is the probability that in any given box of clips will contain [8]

i.No defective
ii. At least two defective
iii.At most two defective

5.a. An orange juice producer buys all his oranges from a largeOrange grove. The amount of juice squeezed from each of these oranges is normally distributed with mean of 4.70 ounces and a standard deviation of 0.40 ounces what is the probability that a randomly selected orange will contain [8]

i.Between 4.70 to 5.00 ounces?
ii.More than 5.10 ounces?
iiiLess than 4.80 ounces?

b. If the manager of paint supply store wants to estimate the mean amount of paint in a one gallon can to within +-0.04 gallon with 95% confidence with standard deviation 0.02 gallon, what sample size is needed? [7]

6. a. A random sample of 100 students gave the mean weight of 58kg and standard deviation of 4kg .Test the hypothesis that the mean weight of all students is 60kg. [8]

b. A random sample of size 20 from a normal population gives the sample mean of 46 and standard deviation of 6.test the hypothesis at 5%level of significance that the pulation mean is 44. [7]

7. Write short notes on:(any two) [2*5=10]

i. Type first error and type second error
ii.criteria of good estimator
iii.five number summary