

# POKHARA UNIVERSITY

Level: Bachelor  
Programme: BCA  
Course: Probability and Statistics

Semester – Fall

Year : 2010  
Full Marks: 100  
Pass Marks: 45  
Time : 3hrs.

*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.***

1. Write short notes on: (**Any Two**) 2×5
  - a) Quantitative and categorical variables
  - b) Addition theorem on probability
  - c) Type I and Type II errors
  - d) Measure of variation
2. a) The following stem and leaf display representing the cost of memory cards (with leaves in tenth) for sample mobiles that use a particular service station. 7

Stem	leaf
9	714
10	82230
11	561776735
12	394282
13	20

  - i) Construct the frequency distribution
  - ii) What percentage of data is above 1000?
  - iii) What are two information obtained from above display?
- b) What are the different types of data? What are the methods of collecting primary data? 8
3. a) Calculate the correlation coefficient between the sales and advertisement on the basis of following data: 7

Sales	15	12	10	22	17	50	6
Advertisment	35	36	30	40	36	70	9

- b) The following data gives the experience of a machine operator and their performance rating as given by the number of goods parts turned out. 8

Operator	1	2	3	4	5	6	7	8
Experience	16	12	18	4	3	10	5	12
Performance rate	7	88	89	68	78	80	75	83

- calculate the regression line of performance rating on experience.
  - Estimate the performance rating if operator has 7 years experience.
4. a) A computer house purchase RAM from three different supplies X, Y, Z. They supply 50%, 30%, 20% of the total requirement. On the average the percentage of defective items supplied by X, Y, Z are 4%, 1% 3% respectively. The RAM is selected at random and found to be defective. What is the chance that it comes from X? 8

- b) Find the expected demand and its variance 7

Demand	1	2	3	4	5	6
Probability	0.10	0.15	0.25	0.250	0.18	0.12

5. a) State the condition of binomial distribution. Past experience shows that 40% of the officer at a certain industry own a car. Six officer are selected at random from the industry. Find the probability that 7

- Exactly 4 has own car
- No one has own car
- At least one has own car

- b) The daily wages of 1000 workers are generally distributed with the mean of Rs. 7000 and with a standard deviation of Rs. 50. Estimate the number of workers whose daily wages will be 8

- More than 650
- Between 600 to 750

6. a) Write the criteria of good estimator. What sample size will be required if we wish to be 95% confident that the population mean is within 14 of sample mean with standard deviation. 8
- b) A random sample of 1000 items is taken from batch containing five defective items. Set up 95% confidence estimate for proportion of defective items in batch. 7
7. a) A sample of 500 light bulb has average life of 1500 hours with standard deviation of 50 hours. Test whether the mean life of bulb's is 1610 hours or not. 8
- b) A random sample of size 25 from a large population gives sample mean of 65 with standard deviation of 10. State the null and alternative hypothesis that and test at 5% level of significance that population mean is less than 68. 7