POKHARA UNIVERSITY

Level: Bachelor Semester – Fall Year : 2008
Programme: BCA Full Marks: 100
Course: Probability and Statistics 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. a) Draw the histogram and frequency curve for the following data. 7

Monthly wages (in Rs):	10-13	13-15	15-17	17-19	19-21	21-23	23-25
No of workers:	6	53	85	56	21	16	8

b) The mean and standard deviation of 20 items is found to be 10 and 2 respectively .At the time of checking, it was found that one item 8 was incorrect. Calculate the mean and standard deviation if the 8

i. Wrong item is omitted

ii. It is replaced by 12

2. a) Define probability. A problem in statistics is given to three students A,B and C whose chances of solving it are 1/3 ,1/4 and 1/5 respectively , find the probability that 8

i. all of them can solve

ii. none of them can solve

iii. problem will be solved

b) Two urns contain 4 white, 6 blue and 4 white, 5 blue balls. One of the urn is selected at random and ball is drawn from it. Find the probability that the ball drawn is white. 7

3. a) A die is thrown 6 times. If getting an odd number is a success, what is the probability of getting 8

i. 5 successes

ii. A least 5 successes

iii. At most 5 successes

b) A manufacture finds that the average demand per day for the mechanics to repair his new product is 1.5 over a period of 1 year and 7

the demand per day is distributed as Poisson variate. He employs two mechanics. In how many days in one year

i. Both the mechanics would be free

ii. Some demand is refused.

4. a) The weekly wages of 1000 workmen are normally distributed around a mean of Rs. 70/- with a standard deviation of Rs 5/- . Estimate the number of workers when weekly wages will be 8

i. between Rs.70/- and 72/-

ii. between Rs 69/- and 72/-

iii. more than Rs 75/-

iv. less than Rs 63/-

b) A sample of 40 light bulbs was selected from light bulb machine and average burning time was 1416 hours .The standard deviation of burning time is known to be 30 hours 7

i. Compute the standard error of mean.

ii. Construct 90% and 95% confidence interval for true mean.

5. a) The mean breaking strength of the cable supplied by a manufacturer is 2000 with a standard deviation of 150. By a new technique in the manufacturing process, it is claimed that the breaking strength of the cables have been increased. In order to test this claim a sample of 100 cables was tested and the mean breaking strength turned out to be 2100. Can we support the claim at 1 % level of significance? 7

b) In a certain factory there are two independent processes manufacturing the same item .The average weight in a sample of 250 items produced from one process is found to be 120 grammes with a standard deviation of 12 grammes , while the corresponding figures in a sample of 400 items from the other process are 124 and 14 .Find the standard error of the difference of means and also test whether the two mean weights differ significantly or not at 10 percent level of significance. 8

6. a) At a certain date in a large city 400 out of a random sample of 500 men were found to be smokers. After the tax on tobacco has been heavily increased, another random sample of 600 men in the same city included 400 smokers .Was the observed decrease in the proportion of smokers significant? Test at 5% level of significance. 7

b) Two types of batteries are tested for their length of life and the following data are obtained. 8

	No. of samples	Mean life in hrs.	Variance
Type A:	9	600	121
Type B:	8	640	144

Is there a significant difference in the two means?

7. Write short notes on:

a) Five-number summary 10

b) Null Hypothesis