بسم الله الرحمن الرحيم

DEPARTMENT OF CIVIL ENGINEERING - KFUPM

Numerical and Statistical Methods in Civil Engineering

CE 318-1,'11

Assignments No. 06

Subjects: Probability and Statistics Concepts with Applications

Due Date: Dec. 27, '11

1. If a random variable *X* has a *normal distribution* with mean μ = 9, a sample size *n* = 10 and mean $\bar{x}$, test the hypothesis $\mu = \mu_o = 24$ against the alternative that $\mu > \mu_o$ (assuming a level of significance $\alpha = 0.05$).

2. Ten samples of size 2 (each) were taken from a production of lot of bolts (with lengths in millimeters) as given in the following Table P-2.

Table P-2:

Sample No.	1	2	3	4	5	6	7	8	9	10
Lengths	27.4	27.4	27.5	27.3	27.9	27.6	27.6	27.8	27.5	27.3
	27.6	27.4	27.7	27.4	27.5	27.5	27.4	27.3	27.4	27.7

Assuming a normal distribution with mean of 27.5 and variance 0.024, use LCL and UCL and set up a control chart for the mean and graph the sample means on the chart.

3. The following Table P-3 gives the number of accidents that took place in an industrial plant during various days of a week.

Table P-3:

Day	**Mon.**	**Tue.**	**Wed.**	**Thu.**	**Fri.**	**Sat.**
No. of accidents	15	20	11	15	14	16

Using *chi-square distribution* test, *study* the data given and *test* the *hypothesis* that the accidents in the plant are uniformly distributed.