KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS AND STATISTICS
Term 141

STAT 319 Statistics for Engineers and Scientists

Quiz #4 Tuesday December 16, 2014

Name: _____ ID# _____

1) An engineer wants to study the effect of using a computer-aided design (CAD) software package in terms of time saving. Eight experiments have been conducted, and the percentage time savings by CAD are 80, 10, 37, 26, 45, 29, 44, 5.
   a) At the 5% significance level, can the engineer conclude that CAD will indeed save time?

   b) What is the p-value of the test?

2) A chemical engineer is comparing two chemical processes to remove impurities, involving low or high-pressure purifications. He is interested in proving that the high-pressure process is more effective than the low-pressure process. He conducts experiments to measure the percentage of impurities levels after purification, and records the following data.

Low-pressure Process	High-pressure process
$n_1 = 10$	$n_2 = 15$
$\bar{X}_1 = 2.3$	$\bar{X}_2 = 1.5$
$s_1 = 0.9$	$s_2 = 0.8$

a) Can the engineer prove his claim? Use a 1% significance level.

b) What assumptions, if any, does the engineer need to carry out the test above?