Time:2 hours

STAT 201
Second Semester, 04-05
FINAL EXAM

3/06/05

Name: _____ ID Number:

Instructions:

1) Where decimals are appropriate, give answers correct to 2 decimal places

2) Show your work in all the problems.

(13%) 1.The scores on a test for applicants for some jobs have a mean of 100 and a standard deviation of 15. The sores are normally distributed.
If a personnel manager wishes to select potential employees from the top 30% 0f the applicants, find the cutoff score.

(14%) 2. There are 10 males and 15 females in a statistics class of 25 students. Five are to be sampled. Explain how you would obtain the following samples:

a) A simple random sample.
b) A proportional stratified sample, where the strata are males and females.

(15%) 3. An insurance company wants to determine the strength of the relationship between the number of hours (x) a person works per week and the number of injuries or accidents (y) that person has. For a random sample of 5 people who worked between 32 and 45 hours, the sums from the data for the number of working hours and the number of injuries are the following:

$\Sigma x = 193$, $\Sigma y = 17$,

$S_{xx} = 87.2$ $S_{yy} = 41.2$ and $S_{xy} = 48.8$

a) Determine the regression equation for the data.
b) Predict the number of accidents for someone who worked for 35 hours..
c) Find the coefficient of determination and deduce the percentage of variation in number of accidents due to the linear regression..

(13%) 4. For a group of 10 women subjected to a stress test, the mean number of heartbeats per minute was 115 and the standard deviation was 6 beats. Find the 90% confidence interval of the true mean for all women subjected to the same test. Assume that the women's heartbeats are normally distributed.

(15%) 5. A professor wanted to estimate the mean score of all students at his university on a national math placement test. He will use a random sample of students for the purpose. If the standard deviation of the population is 10, what sample size is necessary so that the maximum error of the estimate would be 2 points with 95% confidence level?

(15%) 6. Weights of males between the ages of 20 and 30 have a mean $\mu = 77$ kgs with a standard deviation $\sigma = 12.7$ kgs. Find the probability that the mean weight of a simple random sample of 40 males in this age group is less than 75kgs.

(15%) 7.Historically, evening long-distance phone calls from a particular city have averaged 15.20 minutes per call. In a random sample of 35 calls, the sample mean time was 13.80 minutes per call with a standard deviation of 5 minutes.

a) At the 5% significance level, test whether the mean duration for evening long-distance phone calls from this city is different from 15.20 minutes.

b) What type of error might have been committed because of the result of the hypothesis test? State the error in an English sentence related to the particular application given.