Due 20 Sept. '02
NAME_____
Reg. No._____

STATISTICS #2

Physics 3302

1. Dice Revisited: Write a program in Excel, MathCad or Mathematica a similar language to simulate the fair die in problem 3 of last week. (Clearly the computer package used must have a random number generator.) This is most easily done by getting the random number generator to generate numbers on the interval 0 to 6 and then bin them in 0-1, 1-2, *etc.* bins for die rolls of 1, 2, 3, *etc.*, respectively. As in 3 of last week make histograms of number of occurrences, sum of pairs, and intervals between 1s. Run the program for 50, 500, and 5000 rolls. Test the fairness of random number generator using simple counting statistics, $\sigma_t = \text{sqrt}(N_i)$ and using the "χ^2 goodness of fit test".

2. Poisson Distribution and c^2: III-16 and 28.

3. Standard Deviations: IV-3 and 4.

4. Weighted Means: IV-6.

5. Planck's Constant: IV-10

6. Correlations: IV-22