


## Tutorial 9

### Question 1

(14.2) Previous enrolment records at a large university indicate that of the total number of persons who apply for admission, 60% are admitted unconditionally, 5% are conditionally admitted, and the remainder are refused admission. Of 500 applicants to date for next year, 329 were admitted unconditionally, 43 were conditionally admitted, and the remainder were not admitted. Do the data indicate a departure from previous admission rates?

- (a) Carry out the test using  $\alpha = 0.05$ .
- (b) Find the  $p$ -value associated with the test in (a).


### Question 2

(14.8)  The Mendelian theory states that the number of a type of peas that fall into the classifications:

- Round and yellow
- Wrinkled and yellow
- Round and green
- Wrinkled and green

should be in the ratio of 9:3:3:1. Suppose that 100 such peas revealed 56, 19, 17, and 8 in the respective categories. Are the data consistent with the model? Use  $\alpha = 0.05$ . (Note: the expression 9:3:3:1 means that 9/16 of the peas should be round and yellow, 3/16 should be wrinkled and yellow, etc.)

### Question 3


(14.12)  The numbers of accidents experienced by machinists were observed for a fixed period of time, with the results as shown in the table below. Test at the 5% significance level that the data come from a Poisson distribution.

Accidents per machinist	Frequency of observation (number of machinists)
0	296
1	74
2	26
3	8
4	4
5	4
6	1
7	0
8	1

## Question 4

(14.14) A study was conducted to determine the effect of early child care on infant-mother attachment patterns. In the study, 93 infants were classified as either secure or anxious. In addition, the infants were classified according to the average number of hours per week that they spent in child care.

Attachment Pattern	Hours in child care		
	Low (0-3 Hours)	Moderate (4-19 Hours)	High (20-54 Hours)
Secure	24	35	5
Anxious	11	10	8

- (a) Do the data indicate a dependence between attachment patterns and the number of hours spent in child care? Test using  $\alpha = 0.05$ .
- (b)  Repeat (a) using **R**.