**Chapter 8 Chi square and non-parametric hypothesis testing – MCQ Student**

1. The null hypothesis in the chi-square test states that
   1. The rows and columns in the table are associated
   2. The rows and columns in the table are not associated
   3. Neither of the two

The correct answer is b.

Support comment: The null hypothesis in the chi-square test states that there is no association between the rows and columns.

1. Contingency tables and degrees of freedom are key elements of the chi-square test
   1. True
   2. False

The correct answer is a.

Support comment: The chi-square test compares the observed vs. the expected frequencies. This forms the contingency table, whilst the shape of the chi-square distribution will vary in accordance with the degrees of freedom associated with it.

1. For the chi-square test to be effective, the expected value for each cell in the contingency table has to be at least
   1. 3
   2. 5
   3. 10

The correct answer is b.

Support comment: For the chi squared test to give meaningful results the expected frequency for each cell in the 2\*2 contingency table is required to be at least 5.

1. The null hypothesis of the sign test is that
   1. Half the ranks to be less than the median and half greater than the median
   2. Half the ranks to be less than the mean and half greater than the mean
   3. The lower half the ranks to have the same mean as the upper half
   4. The lower half the ranks to have the same standard deviation as the upper half

The correct answer is a.

Support comment: The null hypothesis is the sign test states that the sample median is equal to the population median, or that the sample median is smaller/greater than the population median.

1. The null hypothesis for the Mann-Whitney U test is used to test that
   1. Two samples are from different populations
   2. Two samples are from different populations but have the same mean
   3. Two samples are from the same population and have the same mean
   4. Two samples are from the same population and have the same median

The correct answer is d.

Support comment: The basic premise of the Mann-Whitney U test is that once all of the values in the two samples are put into a single ordered list, if they come from the same parent population, then the rank at which values from sample 1 and sample 2 appear will be by chance. If the two samples come from different populations, then the rank at which the sample values will appear will not be random and there will be a tendency for values from one of the samples to have lower ranks than values from the other sample. We are thus testing for different locations of the two samples.