Statistics (II) Midterm Exam April 22, 2016

Student ID: _____ Name: _____ Department: _____

Part 1: Short answer questions by computer (20 points)

Sorry! 這部分是在電腦教室考的，時間緊湊，因此 data 檔來不及抓。

1. Discrimination in hiring has been illegal for many years. It is illegal to discriminate against any person on the basis of race, gender, or religion. It is also illegal to discriminate because of a person's handicap if it in no way prevents that person from performing job. In recent years, the definition of "handicap" has widened. Several applicants has successfully sued companies because they were denied employment for no other reason than that they were overweight. A study was conducted to examine attitudes toward overweight people. The experiment involved showing a number of subjects videotape of an applicant being interviewed for a job. Before the interview, the subject was given a description of a job. Following the interview, the subject was asked to score the applicant in terms of how well the applicant was suited for the job. The score was out of 100, where higher scores described greater suitability. (The scores are interval data.) The same procedure was repeated for each subject. However, the gender and weight (average and overweight) of the applicant varied.
   a. Can we infer that the scores of the four groups of applicants differ? (Use the sheet 1 in the Excel file of XrA14-06) (5 points)
   b. Are the differences detected in part (a) because of weight, gender, or some interaction? (Use the sheet 2 in the Excel file of XrA14-06) (5 points)

(Note: Write down the null and alternative hypotheses, copy the complete ANOVA Table from computer output, and answer the question to obtain full credit)

2. The cost of workplace injuries is high for the individual worker, for the company, and for society. It is in everyone's interest to rehabilitate the injured worker as quickly as possible. A statistician working for an insurance company has investigated the problem. He believes that physical condition is a major determinant in how quickly a worker returns to his or her job after sustaining an injury. To help determine whether he is on the right track, he organized an experiment. He took a random sample of male and female workers who were injured during the preceding year. He recorded their gender, their physical condition, and the number of working days until they returned to their job. These data were recorded in the following way. Column 2 and 3 store the number of working days until return to work for men and women, respectively. In each column, the first 25 observations relate to those who are physically fit, the next 25 rows relate to individuals who are moderately fit, and the last 25 observations are for those who are in poor physical shape. Can we infer that the six groups differ? If differences exist, determine whether the differences result from gender, physical fitness, or some combination of gender and physical fitness. (10 points) (Use the format of the SPSS file of XrA14-12) (Note: Write down the null and alternative hypotheses, copy the complete ANOVA Table from computer output, and answer the question to obtain full credit)