

Question 2 (11 marks)

Import the data **cars.sav** with the following variables:

- engine: Engine Displacement (cu. inches)
- horse: Horsepower
- weight: Vehicle Weight (lbs.).

- a) Find the correlation associated with the **weight** and **horse** and the **weight** and **engine**. Comment.
- b) Which relationship seems stronger? Which variable would probably be better predictor of weight of the car.
- c) Give the linear regression equation to predict the **weight** of a Car from **horse power** and **engine** displacement.
- d) How good is the model of part (c) ? state your hypotheses, test statistics, decision and conclusion at significant level of 0.05.

e) Could you drop the effect of any of these two regressors? State your hypotheses, test statistics, decision and conclusion at significant level of 0.05.

f) Check if the assumptions of the regression are valid?

Question 3 (5 marks)

Students were given different drug treatments before revising for their exams. Some were given a memory drug, some a placebo drug and some no treatment. The exam scores (%) are shown below for the three different groups:

Memory Drug	Placebo	No Treatment
70	37	3
77	43	10
83	50	17
90	57	23
97	63	30

conduct a one-way ANOVA to test the hypothesis that the treatments have different effects.

Question 4 (16 marks)

Import the data "**popular.sav**" data file which is about students goals in Elementary School. Answer the following questions:

a) What is the correlation between the **goals** and **gender** variables?

Use S-Plus to create a **cross tabulation** between **goals** and **gender**:

b) What percentage of the student wanted to be popular (goal=2) ?

c) Are there more female or Male students?

d) What percentage of students who aim to have good grades among the female students.?

e) How many male students want to be good in sport?

(f) Conditioned on the students being popular, What is the probability of being male student?

h) Test the independence between **race** and **goal**.

3. Fit a linear regression model for the above two variables, where **Frt.Shld** is a predictor variable.

4. Test if the mean average of the car price is less than \$16000.