**R PROGRAMMING**

NAME AND SURNAME……GROUP B

**To solve all exercises please first import the test.xlsx file into R or load data.rda.**

**Exercise 1.** …… married persons took part in the survey (variable fc11). **[1p]**

**Exercise 2.** The average age (variable age) of married persons (variable fc11) was ……years. **[2p]**

**Exercise 3.** Compute basic descriptive statistics of income (variable fp65) (min, max, mean, standard deviation and median) for males (variable sex). **[2p]**

Min= Max= Mean= Sd= Median=

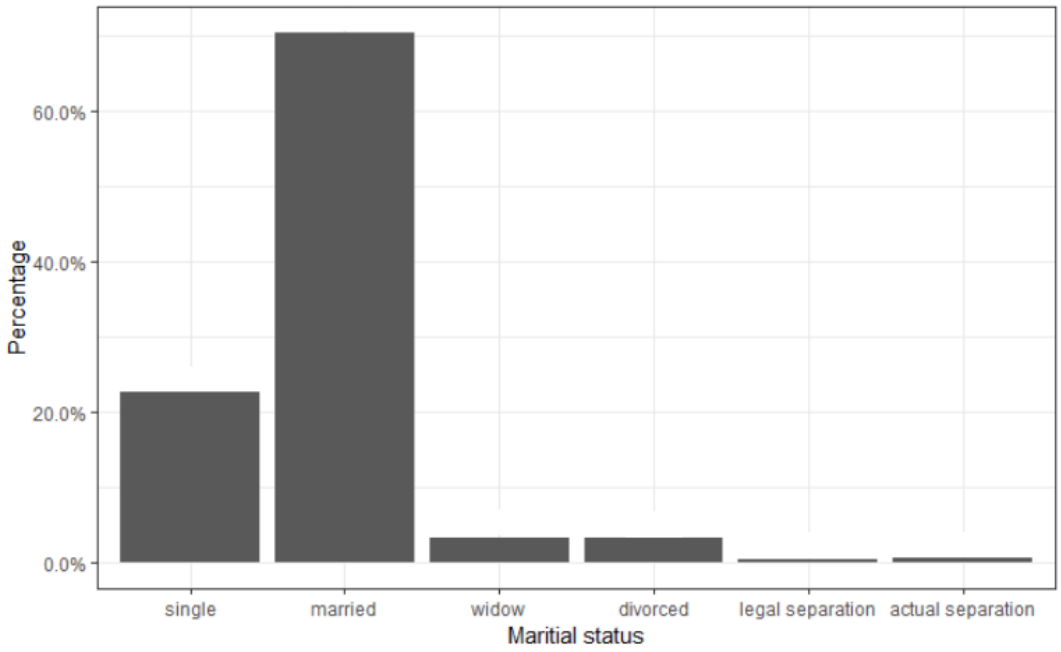
**Exercise 4.** Complete the following contingency table, which contains information about the number of respondents by class of locality (variable class) and the variable fp29 (What is more important in your life?). **[1p]**

| | What is more important in life? | |
|---|---|---|
| Class of locality | pleasure, abundance, no stress | achieving important goals despite difficulties, pain and sacrifices |
| 500T + | | |
| 200T - 500T | | |
| 100T - 200T | | |
| 20T - 100T | | |
| - 20T | | |
| Rural | | |

**Exercise 5.** Recode variable age into two levels: 1 – up to 35 years (including 35), 2 – above 35 years and fill in the table below with frequencies. **[2p]**

| | | Age | |
|---|---|---|---|
| | | up to 35 | above 35 |
| sex | Male | | |
| | Female | | |

**Exercise 6.** Complete information about the percentage of respondents by marital status (variable fc11) by entering the appropriate values above each bar separately. **[1p]**




**Exercise 7.** Compute and interpret the Pearson coefficient of correlation between height (variable fp55) and weight (variable fp56) for males (variable sex) living in 500T+ cities (variable class). **[2p]**

**Exercise 8.** Quartiles of height (variable fp55) for females (variable sex) are equal to: **[2p]**

Q1=…… Q2=…… Q3=……

**Exercise 9.** Write a function in R which will create a bar plot with frequencies for any categorical variables (e.g. sex). Please write the code of this function. **[3p]**

**Exercise 10.** Write an R function which for a given radius $r$ returns the surface area of the ball ($F = 4\pi r^2$) and its volume ($V = \frac{4}{3}\pi r^3$). **[3p]**

**Exercise 11.** Find and write an R code: **[3p]**

a) $4 \cdot A - 2 \cdot B$

b) $(A^T \cdot B)^{-1}$

where:

$$A = \begin{bmatrix} 19 & -13 \\ 30 & 3 \\ -35 & 56 \end{bmatrix}, \quad B = \begin{bmatrix} -5 & -1 \\ -30 & -45 \\ 35 & 56 \end{bmatrix}.$$