BIB Statistics for Business Resit exam S21
NAME:

Instructions:
You have 2h. There **are two parts.**
As soon as you finish Part 1, take a picture of your work and and send it by e-mail to your professor.
Then proceed with Part 2. Professor Mahjoub will email you **the Part 2 (EXCEL part)** as soon as you e-mail to him your Part 1. Then you work on the EXCEL part and when you finish it you email it to your professor. Respect the time please.

I. **PART 1 Use the z, t table**

II. **Solve the following problems and SHOW work!!, state assumptions**

1. 10 pts.
   A food processor packages orange juice in small jars. The weights of the filled jars are approximately normally distributed with standard deviation of 0.3 ounce.
   The mean weight is claimed to be 10.5 ounces. In a random sample of 100 jars the average is found to be 10.87 ounces. **Is there really a problem with the food processor**?
   Set the two hypotheses, run the appropriate test, compute p value and conclude at alpha=0.01.

2. 8 pts.
   An analyst is interested in *the proportion* of renters of households in his city.
   He is claiming that 89% of all households are owners. He selected a random sample of 500 households and it was found that 380 are renters. Use 99 % confidence **to test his claim about the real proportion of renters.** Conclude.

3pts.

3. The daily demand *of 'Cola 00'* bottles at Spiro's café, follows the N(90,25).
   Compute the 25th percentile **and interpret**

4. 10pts
   The actual times (in minutes) that 8 randomly selected trains block crossings were:
   10.4 6 6.5 9.5 5 8.2 9 6.5
   A Canadian railway company claims that its trains block on average 7 minutes per train. Use a 99% confidence interval to test the claim. Conclude

II**. Answer the following questions.** Circle the correct answer

1. 1 pt.

The smaller the spread of scores around the arithmetic mean,
   A. the smaller the standard deviation.
   B. the smaller the interquartile range.
   C. the smaller the coefficient of variation.
   D. All the above.

2) 1pt
The width of the confidence interval for the estimation of a population average, depends on
I. the standard deviation of the sample.
II. the value of x for which the prediction is being made
III. the sample size.
A) I only B) All of these C) II only D) I and III

3)1pt.
True or False:
A histogram can have gaps between the bars, whereas bar charts cannot have gaps.

4) 1pt.
True or False:
The line drawn within the box of the boxplot always represents the arithmetic mean.

5) 1pt.
True or False:

The larger the p-value, the more likely you are to reject the null hypothesis.

6) 2pts.
Income, Y, is related to age, X, and it was found that $R^2 = 0.58$.
This tells us:

A. Income is 58% of age
B. Age explains 58% of the variation in Income
C. 0.58 years of age explains income
D. None of the above

7) 2pts
To test the association between one categorical and one quantitative variable we could use a
A) t test with n-1 degrees of freedom
B) Chi 2 test
C) t pooled test with equal variances
D) F test