MATH108 10FA Midterm ch7-11 B
[answers in web view] Total points: 70

Name:_____
Student ID:_____

> Let the words of my mouth and the meditation of my heart
> Be acceptable in Your sight, O LORD, my Rock and my Redeemer.
> -- Psalm 19:14

- Please show all your work! No partial credit will be given for incorrect answers with no work shown.
- Please draw a box around your final answer.
- You are only permitted to use your own calculator and writing implements. Cell phones should be muted and left in your pocket or bag.
- All relevant tables are attached to the back. You may detach them for your reference.
- Assume $\alpha = 0.05$ everywhere unless indicated otherwise.
- For t-tests on two groups, if the df is not given, you may use the conservative estimate of $df = \min(n_1, n_2) - 1$.

1. Do wives wash hands more frequently than their husbands do? Six couples were asked how many times per day they wash their hands; the results are in the table below.

							Mean	**SD**
Wife:	3	7	8	7	8	9	7	2.098
Husband:	7	3	3	3	3	5	4	1.673

(a) What is the **population** of interest? **[1]**

(b) Name the **variable(s)** which need to be measured, indicate their levels of measurement, and whether each is a predictor or outcome variable. **[2]**

(c) State the null and alternate **hypotheses**, both in words and in appropriate notation. Which statistical test(s) would be appropriate? **[3]**

(d) Run an appropriate **parametric** test and bracket the *p*-value. **[5]**

(e) State the **conclusion** from this test, and interpret it in the context of the original research question. **[2]**

(f) Using the same data, perform an appropriate **non-parametric** test and bracket the *p*-value. **[4]**

(g) State the **conclusion** from this test, and interpret it in the context of the original research question. [2]

(h) Which test do you think is more **appropriate** for this data, the parametric or the non-parametric test? Why? [2]

2. Are nurses who work in the ER (emergency room) and nurses who don't work in the ER equally likely to be taking prescription anti-depressants (ATD)? The number of participants in each category is listed in the table below.

	ATD	No ATD
ER	33	42
Non-ER	20	55

(a) What is the **population** of interest? [1]

(b) Name the **variable(s)** which need to be measured, indicate their levels of measurement, and whether each is a predictor or outcome variable. [2]

(c) State the null and alternate **hypotheses**, both in words and in appropriate notation. Which statistical test(s) would be appropriate? [3]

(d) Run the appropriate test and bracket a ***p*-value**. [4]

(e) State the **conclusion** from this test, and interpret it in the context of the original research question. [2]

3. Suppose we wish to determine whether the location of birth (in hospital or at home) has an impact on birth weight (in kg).

(a) Name the **variable(s)** which need to be measured, indicate their levels of measurement, and whether each is a predictor or outcome variable. [2]

(b) State the null and alternate **hypotheses**, both in words and in appropriate notation. Which statistical test(s) would be appropriate? [3]

(c) Data for this experiment are given below. Run an appropriate **parametric** test and bracket the *p*-value. [5]

									Mean:	**SD:**
Hospital:	3.7	3.2	4.4	4.8	5.1	4.7	2.9	3.2	4.0	0.8519
Home:	3.6	2.6	3.9	2.7	3.1	3.0	2.8		3.1	0.4830

(d) State the **conclusion** from this test, and interpret it in the context of the original research question. [2]

(e) Using the same data, perform an appropriate **non-parametric** test and bracket the *p*-value. [4]

(f) State the **conclusion** from this test, and interpret it in the context of the original research question. [2]

(g) Which test do you think is more **appropriate** for this data, the parametric or the non-parametric test? Why? [2]

4. Does workplace (defined as "hospital", "clinic", or "community") affect nurses' hourly wage?

(a) What is the **population** of interest? [1]

(b) Name the **variable(s)** which need to be measured, indicate their levels of measurement, and whether each is a predictor or outcome variable. [2]

(c) What is the appropriate parametric statistical **test** to run? [1]

(d) State the null and alternate **hypotheses**, both in words and in notation. [2]

(e) Data for this experiment are given below. **Run** an appropriate test and bracket the *p*-value. [5]

Hospital:	28	30	32
Clinic:	31	37	
Community:	24	28	

(f) State the **conclusion** from this test, and interpret it in the context of the original research question. [2]

(g) What are the **assumptions** of the statistical test you performed? Is there evidence to suggest that any of these assumptions have been violated in this dataset? [4]