FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL FOUNDATIONS AND COUNSELLING
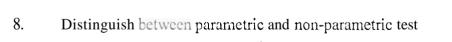M.A., M.ED., **PhD DEGREE** EXAMINATION
2007/2008 HARMATTAN SEMESTER

EFC 605: STATISTICS IN EDUCATION

INSTRUCTIONS: Answer **ALL** questions
TIME ALLOWED: 3 Hours 30 Minutes

Part 1

1.   The term used to describe the deviation of the difference between pre-test and post-test scores from the regression line is _____

2.   Explain in a sentence the meaning of part correlation using variables X, Y and Z.

3.   What do we mean when we say that the coefficient of correlation, r_{xy}, is dimensionless?

4.   What is the best measure of central tendency when set of scores contains extreme scores?

5.   State 3 uses of regression analysis

6.   Mention 3 sources of inaccuracy in the standard error of estimate

7.   Which of the fallowing is not true concerning a normal curve
   a.   Mean < median < mode
   b.   Mean > median > mode
   c.   Mean > median < mode
   d.   None of the above

8.   Distinguish between parametric and non-parametric test

9.   Which of one-tailed and two-tailed test is appropriate for an alternative hypothesis?

10.   When a student who has an outstanding course is listed in the graduation list, is this a type I or type II error?

11.   Given the following tabulation on the effects of counselling methods on the smoking behaviour of undergraduate students

Sex	Counselling Methods		
Male	X_1	X_2	X_3
Female	X_4	X_5	X_6

Formulate 3 hypotheses that may be tested on the variables in a 2-way ANOVA

12. Why are multiple comparison procedure more statistically appropriate than several t-test as post hoc measures

13. Give 5 justification for the use of samples in researches rather than whole populations

14. Why is simple random sampling not very practicable in social science research?

Part II

1. Define the following terms:
   a. Robustness   b. Power   c. Critical value
   d. Degree of freedom e. Random sample   f. Skewness

2. Consider the following Pre-test (X) and Post-test (Y) scores
   X = 75, 76, 73, 75, 74, 75, 76, 72, 70, 75
   Y = 81, 82, 84, 87, 90, 86, 90, 89, 85, 91
   Compute r_{xy} and test its significance. (Take table value to be 0.648, $\alpha = 0.05$)

3. Apply Kruskal Wallis H-test on the following data:
   Group1:   1.69, 1.53, 1.91, 1.82, 1.57, 1.77, 1.94, 1.60
   Group2:   1.82, 1.93, 1.94, 1.60, 1.78, 1.85, 1.72, 1.98
   Group3:   1.47, 1.64, 1.56, 1.39, 1.90, 1.82, 1.69, 1.83

4. Given the following data on socio-economic background and academic performance

	Upper Class	Middle Class	Lower Class
A	8	5	04
B	12	10	09
C	15	18	24
D	06	12	20

   a. Coinpute chi-square between the two variables
   b. If $\chi_{.05}^2 (6) = 12.592$, is your calculated chi-square significant?
   c. Interpret your result.

5. Let the following data be the results from a one-way ANOVA procedure involving 4 groups

   $X_1 = 8.2$ n = 10 for each group
   $X_2 = 12.0$ Mswg = 3.0
   $X_3 = 9.8$
   $X_4 = 14.8$

   Determine which of the groups are significant using the Tukey method of multiple comparisons.