APPENDIX E

The Pre-test Administered to all Students in Both Groups

Name _____

G. Tech. 14

Preliminary Exam

Fall Quarter 1970

Purpose:	To determine proficiency in the use of the slide rule at the beginning of the course.
Instructions:	Do your best to answer the questions. Do not guess. If you cannot solve a problem by using the slide rule, then leave that answer space blank. DO NOT MAKE LONGHAND CALCULATIONS.
Note:	Your score on this examination will not count in any way toward your final grade in this course
Time Allowance:	One (1) hour is the maximum time limit. If you finish early, please just sit quietly until the instructor collects the papers when all students are obviously finished.

Part I. Slide Rule Fundamentals

Fill in the blanks or circle either True or False.

1. Name the three (3) major physical parts of the slide rule.

   1._____ 2._____ 3. _____

2. When reading the C & D scales, we mentally divide each small interval into _____parts.

3. To find the cube root of a number, we would use either the C or D scale in conjunction with the _____ scale.

4. The left end of the C scale is usually called the _____ index, and the right end is usually called the _____ index.

5. If the hairline is positioned over a particular number on the C scale, then it is also positioned over the reciprocal of that number on the CI scale. ☐ True o☐ False.

6. The "folded" scales (CF, DF, CIF) can be read with more accuracy than the regular scales (C, D, CI). ☐ True or ☐ False.

7. The Sine scale is effectively twice as long as the slide rule. ☐ True o☐ False.

8. The Tangent scale is effectively four times as long as the slide rule. ☐ True or ☐ False

9. The black LL1 scale is the reciprocal of the red LL1 scale. ☐rue or ☐lse.

10. The LL scales are used in conjunction with CIF scales to find logarithms in the base 10 number system. ☐ True or ☐ False.

Part II. Multiplication and Division

Write your answers in the spaces provided. Show decimal points distinctly.

1. $(174.6)(23.66) =$ _____

2. $\frac{4797.}{0.863} =$ _____

3. $\frac{(0.675)(3.426)}{479.7} =$ _____

4. $(37.83)(1.467)(6.074,35) =$ _____

5. $\frac{(674.)(7.439)(0.000,549,7)}{(0.8754)(86.6)} =$ _____

Part III. Trigonometry

Write your answers in the spaces provided. Show decimal points distinctly.

1. sin 37.5° = _____

2. tan 29° = _____

3. tan 52° = _____

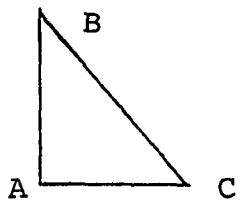
4. arcsin 0.759 = _____

5. cos 37.5° = _____

6. arctan 4.7 = _____

7. sin 2.5° = _____

8. Given the triangle below, solve for the length of sides AB and AC.

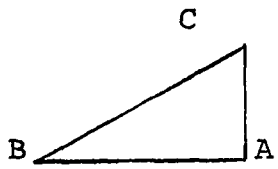


∡A = 90° AB = _____

∡C = 75.3° AC = _____

BC = 5.55 inches

9. Given the triangle shown below, solve for the length of BC and angles ABC and ACB.



∡BAC = 90° BC = _____

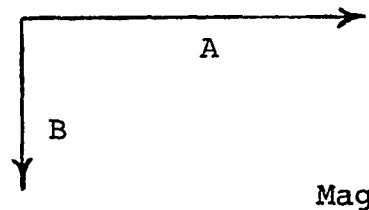
AB = 9.42 inches ∡ABC = _____

AC = 2.57 inches ∡ACB = _____

10. Given the horizontal and vertical vectors shown below, find the magnitude and direction of the resultant vector.

A = 25 lb.

B = 5 lb.



Magnitude of resultant vector _____

Direction of resultant vector from the reference axis _____

Part IV. LL Scales

Write your answers in the spaces provided. Show decimal points distinctly.

1. $e^{1.7}$ = _____

2. In 1.02 = _____

3. In 0.76 = _____

4. $e^{-0.6935}$ = _____

5. If $e^{x} = 0.7$, then x = _____

6. If ln x = 4.0, then x = _____

7. $3^{2.5}$ = _____

8. $7.0^{1/4}$ = _____

9. $95.0^{0.5}$ = _____

10. 0.26^{3} = _____

11. $\sqrt[2]{0.2114}$ = _____

12. $\sqrt[3]{2748.}$ = _____

13. If $8.6^{x} = 100.0$, then x = _____