One of the most important tasks for an individual working in industry is to write a good report of a test or experience. Good communication of procedures, observations, conclusions, and recommendations is essential if a writer is to have the desired influence on the readers of the report. A poorly written report will often have a negative effect. Careless writing with misspelled words invites suspicion regarding accuracy and technical validity.

In this course, you will have an opportunity to gain some experience in preparing technical reports of tests made in the laboratory. While the format listed below may be slightly different than the one you will use working for a company, the skills you develop are easily adapted to other forms. Former graduates in Agricultural Mechanization say that, while writing reports in college was one of their least favorite tasks, the ability to organize their communication in writing has been invaluable to them in their work.

A report should be an accurate, complete record of what you did and what you conclude or recommend. The presentation should be made in a logical order; it should include logical reasoning on which conclusions are based; and the sections should be clearly and concisely written. Length is not necessarily associated with completeness or excellence. The nature of the report will vary with the interests of the people who will read it. For this course, assume that your audience has a mechanical background but is not familiar with the particular subject being reported.

Write in the past tense. Writing in the third person is recommended except that I, me or you may be used on those few occasions where the third person seems awkward or cumbersome. With the advent of word processing, hand-written reports are no longer efficient or acceptable; therefore, the reports must be prepared on a typewriter or word processor. Use of LOTUS to prepare graphs is recommended in most cases, but graphs inked by hand on 20 to the inch paper are also acceptable. Be sure to include enough information on the graph to make it self-sufficient if someone wished to use it without the report.

The reports for this course should contain the following parts:

**Cover:** The report should be bound in an attractive binder (manila report binder, or accro-press binder or clear plastic binder). The course name and your name should be shown on the cover unless you use a clear plastic binder.

**Title page:** On the first page inside the cover, put the exercise title, course number, date and your name.

**Objectives:** Start the body of the report on the second page. Give the title of the experiment at the top of the page; then the objectives or purpose. State the objectives in your own words even though they may be stated on the laboratory instruction sheet. Try to improve on them so that you will have a better understanding of how to write them in a concise manner.
Summary and conclusions: This section of the report should provide the reader with a very condensed review of the study. The major findings or conclusions should be placed in a list of concise statements. If no conclusions can be drawn, a brief summary of the tests and results is adequate. Recommendations may also be presented. The summary and conclusions section is normally written last but, for the convenience of the reader, it is placed early in the report. If space is available, start this section on the same page as the objectives. Use of a word processor makes it easy to add the summary and conclusions after the rest of the report has been written.

Equipment: Present brief specifications of the machine being tested and the equipment used to test the machine. Provide enough detail about the items of equipment and instrumentation so that the reader can properly evaluate the procedure and results.

Procedure: Explain the procedure in sufficient detail to help the reader understand the results. That is, condense the step-by-step directions in the laboratory instructions into a form that will make the reliability and scope of the results easier to grasp. The steps in the tests should be repeatable from reading your procedure section.

Results: Present results that will bring answers to the questions presented in the objectives. Include written text along with illustrative tables and/or figures. Each table or figure must have a number and title (for example: Figure 1. Engine torque vs. speed curves.) so that they can be referred to in the text. The goal is to present each item so that the reader can understand it without thumbing back and forth through the report. On the other hand, the various sections need to supplement each other, so that the reader will get a more complete understanding by studying all of the parts of the report.

The curves should be drawn with the independent variable on the x-axis and dependent variables on the y-axis. The independent variable is the one that is controlled in the tests; the dependent variables are the ones that are measured and that result from changes in the independent variable.

Discussion: In the discussion, include reasons for trends in the results, possible errors in the testing that may have influenced the results, information about the practical value of the results, and suggestions for other necessary tests. For some experiments, it is desirable to compare the results with theory in order to explain how the variables should have influenced the results.

Appendix: The appendix is attached to the end of the report and contains information which supplements the report. The appendix is separated from the remainder of the report by a sheet of paper with the word, APPENDIX, on it. The appendix should include the following information:
1. Sample calculations of the data.
2. The original data sheets.
3. A copy of the laboratory instructions.
4. Any other relevant information, which supports the report but is not needed by the reader in the main body of the report.

Grading form: The report will be graded on the following items:

1. Cover, title page, appearance, organization, and "extras".
2. Summary and conclusions.
3. Objectives.
4. Equipment.
5. Procedure.
6. Results: Text presentation.
7. Results: Tables, figures, and their accuracy.
8. Discussion.
9. Appendix: Sample calculations, data sheets, laboratory instructions, etc.
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Score: _____/100

Deductions (late): _____

Score (final): _____