ECE Lab Report Format – Prof. H. Hanafi

A Lab report should be a clear and concise presentation of engineering work you performed, and must include all relevant aspects of the lab experiment or exercise. The report must be presented in an appropriate professional format such that it could be read and understood by any technical person, even if they were not familiar with the lab. The following format guidelines must be followed for all lab reports.

The lab report must be prepared (typed) with a word processor. Equations and schematics can be neatly drawn by hand if you don't want to use your word processor's equation editor or drawing program. The report should include the following elements:

I. Title Page

Each report shall have a cover page (plain paper accepted) which will contain the following information: 1) Lab Title/Experiment Number, 2) Course Number and Title, 3) Instructor's Name and TA Name, 4) Name of students, 5) Date.

II. Introduction/Objectives

This section introduces the reader to the problem you are trying to solve and guides the reader through your approach to solve the problem. In a few paragraphs a concise statement is to be made of the goal(s) and purpose(s) of the lab. It should summarize approaches adopted and methods involved in carrying out the typical sentence from the instruction/Objective might be, "We built and tested three biasing circuits to determine the advantages of each for temperature stability and sensitivity to poorly-controlled transistor characteristics such as the current gain."

The introduction may contain preliminary hand calculations that you have performed. For instance, if the circuit is an amplifier, you might use hand calculations to establish a suitable bias condition and justify the selection of initial component values based on these calculations.

III. Procedure

This should include a concise step by step outline of what you actually must do to

perform this experiment. Explicitly note any alterations your instructor may make in the procedure.

IV. Results

In the "Results" section present all experimental output in a clear and effective manner. You can refer to steps in the "procedure" of the lab write-up in the Lab Manual, but key schematics of circuit or logic designs should be reproduced in the report. You can cut and paste a Xerox from the Lab manual into the lab report-be sure to give it a figure number and caption. This will allow you to refer to the diagram in your text, for example, "The resistor value was adjusted to achieve a balanced output as described in the lab manual, and the current through the meter A1 in Figure 1 was measured as a function of the source voltage V1." All equipment and hardware utilized in obtaining the results of your lab work must be recorded (type, make, model, etc). This record is important for someone to repeat the work performed or simply for identifying an equipment feature that influenced your results.

Results are brought together in graphs or tables of data whenever possible. Use EXCEL, MATLAB, or other graphing program. *All graphs should be properly titled, large enough, numbered, their axis properly labeled including units, and they must have captions and numbers for easy reference.* Axis labels should contain the description of the quantity, the symbol, and the units (for example, "Diode Voltage, V (mv)"). Figures and graphs may be inserted after the page on which they are referred to (better: inserted in a Figure box on the page) or collected together at the end of the report. In either case, each figure, graph, or chart must have a figure number and a caption (example: "Fig. 3: Current vs. voltage through the diode D1 for the circuit in Figure 1 with the V1 source voltage amplitude of 100V at 60 HZ"). Hand-written figure numbers and captions are OK, but *each figure number must be referred to somewhere in the body of the text.*

Important note: The lab report is your explanation of what you did and what it means, it is not dump of 10 pages of instrument or computer output. If you don't comment on a figure, the assumption is that you don't know what it means or why it is there. Output that is presented but not described in a write-up will be assumed to be incomprehensible to the student and will result in a reduced grade. A good starting point is to try to use the minimum amount of output and other supporting material to adequately document your work. If you don't need refer to a figure, leave it out! If a figure is required, make sure you explain its significance and what conclusions can be drawn from it.

V. Conclusion

What was the result of the experiment? Did it accomplish the purpose, or objective, of the experiment? If the results were not as expected, suggest possible causes of the errors. The conclusion should have scientific and practical significance. It should not be a personal comment such as "this experiment was fun." A statement such as, "this experiment was successful," is unacceptable without further explanation. List possible sources of error and the expected effect such an error would have on the results. If you have suggestions for improving the experimental procedure, you should include them as well. Remember, the 'Conclusion' by its very nature means that nothing can follow it! Do not put data, calculations, graphs or photos after the 'Conclusion'.