

## Criteria for Judging

- I. Creative Ability (30 points)
  - a. Does the project show creativity and originality in: The question asked? The approach to solving the problem? The analysis of the data? The interpretation of the data? The use of equipment? The construction or design of new equipment?
  - b. Collections cannot be considered to be creative unless they are used to support an investigation and help to answer a question in some original way.
  - c. In engineering, distinguish between gadgeteering and a genuine contribution.
- II. Scientific Thought (30 points)
  - a. Is the problem stated clearly and unambiguously?
  - b. Is the problem sufficiently limited so that it was possible to attack it?
  - c. Was there a procedural plan for obtaining a solution?
  - d. Are the variables clearly recognized and defined?
  - e. Are there adequate data to support the conclusions?
  - f. Are the limitations of the data recognized?
  - g. Does the student understand how her/his project ties in with related research?
  - h. Does the student have an idea of what further research is indicated?
  - i. Did the student cite scientific literature – not popular literature?
  - j. Remember that the student may have received assistance, that it is important to estimate the extent of this assistance, and what contribution it made to the project.

-OR-

Engineering Goals (30points)

  - a. Does the project have a clear objective?
  - b. Does this objective have relevance to the needs of the potential user?
  - c. Is the solution: Workable and economically feasible?
  - d. Can the solution be used in the design or construction of some end product?
  - e. Does the solution represent an improvement over previous alternatives?
  - f. Has the solution been tested to see if it works?
- III. Thoroughness (15 points)
  - a. Does the project carry out its purpose to completion within the objective?
  - b. Are the conclusions based on a single experiment or on replication?
  - c. How complete are the notes and bibliography?
  - d. Is the student aware of other approaches or theories concerning her/his project?
  - e. How much time was spent on the project?
  - f. Is the student familiar with the scientific literature in the field in which she/he was working? Note: Citations are not considered to be an important consideration in engineering (as opposed to science) and so a student should not be penalized for a lack of citations.
- IV. Skill (15 points)
  - a. Does the student have the skills required to do all the work necessary to obtain the data, which support her/his project? Laboratory skills? Computation skills? Observation skills? Design skills?
  - b. Was the project carried out under the supervision of an adult, or did the student work largely on her/his own?
  - c. Where did the equipment come from? Did the student build it herself/ himself?
- V. Clarity (10 points)
  - a. How clearly is the student able to discuss the project? Is she/he able to explain its purpose, procedure, and conclusions in a clear concise manner?
  - b. Has the student expressed herself/himself well in written materials? Is the written material her/his own?
  - c. Are the important phases of the project presented in an orderly manner?
  - d. How clearly are the data results presented?
  - e. How well does the project explain itself?