

## **IEEE Region 5 2007 Conference Student Circuit Design Contest Rules and Regulations (Revision 1.0, August 10, 2006)**

The Circuit Design Contest will take place at a laboratory or laboratories of the Electrical Engineering Department of the University of Arkansas on Saturday April 21, 2007. The Contest begins at 8:30 am and ends at 4:30 pm. Transportation to and from the conference hotel and lunch will be provided.

The Contest is open only to undergraduate IEEE Student members who are registered for the Conference. Each team will consist of two students from the same Student Branch. Single-person teams are not permitted. Only one team per Student Branch is permitted.

*Space is limited in the labs.* Negotiations are underway to expand the number of lab stations available, but as of this revision, there are only guaranteed spots for the first twelve (12) teams. It is possible that the limit may be raised to up to 20 teams, but teams are encouraged to register early to ensure a spot in the first 12 teams. If the team limit is raised, teams will be registered in the order in which their registration was received. There is no registration fee for the Contest.

The design problem may be analog, digital, or a mixed digital and analog design. Participants will generally be juniors or seniors who have completed courses in digital logic design, circuits, and electronics covering topics such as transistors, operational amplifiers, comparators, timers, and digital logic. No software, either assembler or higher-level language, will be needed.

The design problem will be provided to the teams at the start of the Contest. Participants will build the entire system using the parts and test equipment provided. Work neatly in the Laboratory Notebook provided. The notebook will be turned in for judging. Three or more engineers from industry will be the judges. Judges will not be current students, faculty or staff from any Region 5 university.

### **Procedures:**

1. All teams are to work independently in completing their projects.
2. Students should bring their own pencils, pens, paper, rulers, templates, and calculators. No other student-provided materials will be permitted. Component cost data, specifications and data sheets will be provided.
3. All teams will have until 3:30 pm to complete their project. Circuit work will stop at that point except for demonstration to the judges (between 3:30 and 4:30 pm). Teams finishing early may demonstrate their project early.
4. Laboratory Notebooks must be turned in by 4:30 pm.
5. Teams must first develop a preliminary paper design (in the Laboratory Notebook) including a logic/schematic diagram and a set of engineering specifications. Teams must bring that preliminary design to the judges for

approval before proceeding to construction. Approval to proceed does not imply any particular assessment of your design.

6. Parts available for your design are provided to you in a package of parts. No other parts are permitted.
7. Following construction and debugging of the project, each team will demonstrate performance against specifications to a contest judge. Both team members will be expected to answer questions about the project during this checkout.
8. Your Laboratory Notebook will serve as your Final Report on the project. Neatness and completeness will count. Organize your notebook in a way that separates the major components/stages of the design. Information in the notebook should include:
  - Title Page: team number, title of project, date (**do not include school or student names**)
  - Analysis of specifications and design computations
  - Logic diagrams, circuit schematics and timing diagrams
  - Tests conducted to verify performance to specifications
  - Cost analysis
  - Conclusions
9. Judges may ask questions during the design and debugging process in order to help them assess the thought processes of the participants.

### **Registration:**

To register, please send an e-mail to Dr. Hiram C. Patangia, [hcpatangia@ualr.edu](mailto:hcpatangia@ualr.edu). This e-mail should contain the name of the Student Branch, the names of the two students comprising the Design Contest team along with their e-mail addresses and academic year (Freshman, Sophomore, Junior, or Senior), and the name and e-mail address of the Student Branch Counselor. Also, please indicate at that time any special dietary concerns. Please register before March 1, 2007.

### **Judging Score Sheet**

There will be an allocation of points for performance to specifications, documentation and quality. Highest total score wins. Performance to specifications will carry the most weight in scoring.

- “Performance to specifications” refers to the degree to which the specifications are met. This will be determined principally from the demonstration, with confirmation from the Laboratory Notebook.
- “Documentation” refers to the completeness and correctness all computations, derivations, equations, logic diagrams, timing diagrams, and circuit schematics. This will be determined from your Laboratory Notebook.
- “Quality” includes the judges’ opinions and evaluations of the economy, efficiency, appropriate selection of components, and the cleanness of the design.