



Institute of Computer Engineers of the Philippines

SEC Reg. No. 201120675

LOGIC CIRCUITS DESIGN

(Note: This guideline is intended for the National CpE Challenge. If the same will be used for Regional Competitions, necessary changes may do, if applicable).

Logic Circuits Design Competition aims to exhibit the talents, skills and competence of students in the fundamental course in Computer Engineering: Logic Circuits and Switching Theory. Participants design and analyze combinatorial circuits, and show how to construct the minimal (least number of gates) circuit necessary to implement a specific function.

THE COMPETING TEAM

1. Each participating region is entitled to send one team (the regional team's champion) composed of two (2) ICpEP student members regardless of year level endorsed by the ICpEP Regional Chapter President. Regions with twenty or more schools offering BSCpE program may send maximum of two (2) teams.
2. A registration fee of Php 1,500.00 per team shall be collected
3. All team members must be currently enrolled in BSCpE program during the time competition.
4. The region assigns a faculty member who shall serve as coach. The coach is also the team's official representative and only authorized person to file a protest in behalf of the team.
5. List of participants (*form provided on the last page*) must be sent through email, dion_tand@yahoo.com, on or before **November 10, 2018** (*for National Competition only*). Late submission of entries shall not be accepted.

THE BOARD OF JUDGES (BOJ)

The BOJ shall be composed of three (3) professionals or experts in the field of digital circuits and must come from a third party committee who have no direct relation to any of the teams. They shall convene to resolve any issue that may arise during the conduct of the competition.

SOURCES OF PROBLEMS:

1. Each region, through the Regional President, shall submit two (2) questions with answers to Engr. Dion Tandingan, ICPEP National VP for Education at dion_tand@yahoo.com. (**For National competition only, deadline of submissions of questions with answers shall be on or before October 31, 2018**). However, the committee reserves the right to include, modify or exclude the submitted questions for particular reasons.
2. The problems for the competition are applications of combinational logic which shall be implemented using Small Scale Integration or SSI IC packages, and shall not exceed to 5-input variable.

MECHANICS

1. Each team shall bring the following materials to be used in the competition:

Power Supply	5 pcs. 74LS32
1 pc. Breadboard	5 pcs. 74LS00
Connecting wires	5 pcs. 74LS02
5 pcs. 74LS08	10 pcs. LE
5 pcs. 74LS04	1 pc 8-bit DIP switch
2. The competition is good for two(2) hours.
 - 2.1. Preparation:
 - a. The first thirty (30) minutes shall be used to check and certify that all materials and power supply are properly working.
 - b. Each team shall require to bring ONLY the exact number of above mention materials. ADDITIONAL materials are STRICTLY not allowed.
 - c. Only the team members, coaches, facilitator and BOJ are allowed to go inside the room.
 - d. All coaches are not allowed inside the room once the facilitator declares the "**The competition is about to start in 5 minutes**".
 - 2.2 Competition proper.
 - a. There shall be three (3) rounds in the competition.
 1. **Easy Round.** Each team shall be given one (1) problem to be solved and to be built on a breadboard for 30 minutes. Teams with the correct answer shall proceed to the next round.
 2. **Average Round.** The winning teams in the Easy Round shall be given one (1) problem to solve for 20 minutes. Only teams with correct and valid logic equation shall qualify to the next round.

If NO TEAM got the correct answer, another set of question shall be given to solve for 20 minutes.

If ONLY ONE TEAM got the correct answer, the team shall be automatically declared as Winner in the competition. Hence, there shall be no Difficult Round.

3. **Difficult Round.** The winning entry/team(s) in the Average Round shall implement/build the logic equation on a breadboard for 20 minutes. Teams who would like to submit the final answers before the end of the allotted time, they are required to inform the Facilitator. The Facilitator shall record the time of submission and mark the entry with "SUBMITTED THE FINAL ANSWERS"
 - b. A timer, placed in an area visible to all teams and coaches, shall be used. The Facilitator shall give the signal to start the competition and record the official start time.
 - c. The teams shall not be allowed to talk with anyone except members of their team and personnel designated by the Facilitator / committee in-charge. Violation to this rule is subject for disqualification.
- 2.3 Checking of answers by the BOJ.
- a. The BOJ shall check the final answer of each team every round.
 - b. In case of a tie in the **Difficult Round**, a tie breaking question shall be given to be answered in 20 minutes.
 - c. Teams with the correct answers shall be ranked based on the total time consumed in accomplishing the task in the Difficult Round.
 - d. The fastest team in this round wins the competition.

WINNERS IN THE COMPETITION

The TOP 3 winners shall be named Champion, 1st Runner-up and 2nd Runner-up and shall receive medals and certificates.

FILING OF PROTEST

1. Only coaches may file protests to the BOJ during the competition. Protests must be based on one or more of the following circumstances: violation of the competition rules, misconduct by the teams, or gross misconduct by contest officials.
2. Controversies and objectives shall be resolved by the BOJ immediately before the conclusion of the competition.
3. The decision of the BOJ is final and irrevocable.



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LOGIC CIRCUITS DESIGN OFFICIAL ENTRY FORM NATIONAL COMPETITION

Region: _____

School: _____

Participants:

Name	Year Level	Signature
1.		
2.		

Submitted by:

Signature over Printed Name of Coach

Endorsed by:

Signature over Printed Name of ICpEP Regional Chapter President



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LOGIC CIRCUITS DESIGN OFFICIAL ENTRY FORM REGIONAL COMPETITION

School: _____

Participants:

Name	Year Level	Signature
1.		
2.		

Submitted by:

Signature over Printed Name of Coach

Endorsed by:

Signature over Printed Name of Program Chair/Head