**ACSL**

**American Computer Science League**

#### Contest #4

**2014 - 2015**

### Intermediate Division



**1. Digital Electronics** Translate the following circuit

to a Boolean expression and

simplify the expression.

**5. Data Structures**

Given that the command SWITCH changes a stack to a queue or vice versa and REVERSE switches the order of a given stack or queue, what is the next item to be POPPED from an initially empty queue?

PUSH(S); PUSH(U); PUSH(N); SWITCH; PUSH(S); PUSH(H); PUSH(I); REVERSE; PUSH(N); PUSH(E); SWITCH; PUSH(S); PUSH(T); PUSH(A); PUSH(T); PUSH(E); POP(X); POP(X); SWITCH; POP(X); POP(X); REVERSE; POP(X); POP(X)

**3. LISP** Evaluate the following LISP expression:

(CDR (CAR (CDR (CAR ‘((b (c d) (e f g)) (h (j k)))))))

**4. Data Structures** Create a binary search tree for the string WALTDISNEYWORLD. What is the depth of the tree?

**2. Digital Electronics** List all the ordered triples

that make the circuit TRUE

