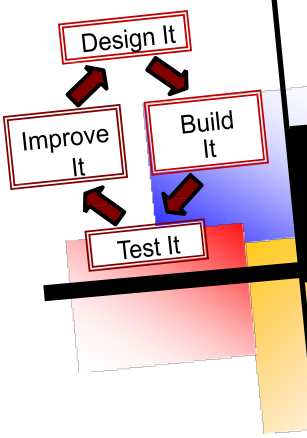

NATIONAL YOUTH ENGINEERING CHALLENGE

Electric Energy Challenge

September 24-26, 2017
Tippecanoe County Fairgrounds, Lafayette, IN

This contest is designed to give youth who are enrolled in the youth-based electric and electronics programs an opportunity to demonstrate their knowledge of electricity, the efficient use of electricity, care, maintenance, and safety of electrical equipment and apparatus found on the farm and in the home, including electronics. Safety will be stressed throughout the contest.
This contest will include (time limits as shown):

1. Written examination *(20 minutes)*
2. Identification of Electrical Equipment and/or parts of the equipment that are found on the farm or in the home, including electrical and electronic symbols *(15 minutes)*
3. Visual Presentation *(15 minutes maximum, 10 minutes preferred)*

References

— Electric 1-4 and Helper's Guide, National 4-H Electric Series

— Indiana 4-H Electric Curriculum, Divisions 1 to 5)
The Education Store - Purdue University
https://mdc.itap.purdue.edu/
1-888-398-4636

Designated judges will preside over the event and their decisions will be final.

Visual Presentation should involve a discussion and/or demonstration of some aspect of electrical energy such as generation, safe use, or conservation. Participants may use working equipment but must observe proper safety precautions when demonstrating any live electrical part.

Participants must furnish their own demonstration materials. Visuals should be readable at 20 feet.

Penalty points = 200 - (average score _____ x 2)

Contestant's Name _____ State _____ Number _____

NATIONAL YOUTH ELECTRIC ENERGY CONTEST

EVENTS	PENALTY POINTS
Written Examination	_____
Parts Identification	_____
Visual Presentation 200 - (average score _____ x 2) =	_____
Total Penalty Points (Low score wins)	_____

Event No. I. Written Examination

Will consist of 25 multiple choice questions pertaining to the Electric program, care, maintenance and safety taken from the National 4-H literature.

Rules:

1. Four penalty points will be given for each question answered incorrectly or unanswered.
2. Time limit 20 minutes.

Scoring: Questions missed _____x 4 = _____Total Penalty Points

Event No. II. Parts Identification

Will consist of a group of 25 numbered parts or symbols which must be identified. Participant will place number by the most correct part name on a list of various electrical or electronic parts.

Rules:

1. Each part to be identified will be numbered.
2. Time limit 15 minutes

Scoring: Parts missed _____x 4 = _____Total Penalty Points

Contestant's Name _____ State _____ Number _____

ELECTRIC ENERGY PARTS AND SYMBOLS IDENTIFICATION

The parts to be identified have numbers attached to them. Select the most correct part name from this list. Write the corresponding number beside the name.

Symbols — Electrical & Electronic

_____Antenna, aerial
_____Antenna, loop
_____Battery, multiple cell
_____Battery, single cell
_____Capacitor
_____Capacitor, variable
_____Connected wires
_____Diode
_____Ground
_____Head phones
_____Inductor, adjustable core
_____Inductor, air core
_____Inductor, iron core
_____Junction box
_____Lamps in parallel
_____Lamps in series
_____Outlet equipped with drop cord
_____Outlet for ceiling lighting or recessed fixture
_____Outlet for clock
_____Outlet, combination radio or TV and power
_____Outlet, duplex
_____Outlet, fan
_____Outlet, floor
_____Outlet, lighting
_____Outlet, weather proof
_____Relay, DPDT
_____Relay, SPST
_____Resistor
_____Resistor, potentiometer
_____Resistor, variable or adjustable
_____Speaker
_____Switch and outlet combination
_____Switch, double pole or DPST
_____Switch, rotary
_____Switch, single pole or SPST
_____Switch, three-way or SPDT
_____Switch, weatherproof
_____Transformer, air core
_____Transformer, iron core
_____Transistor, FET
_____Transistor, NPN
_____Transistor, PNP
_____Transistor, silicon controlled rectifier (SCR)
_____Transistor, TRIAC
_____Unconnected wires

Parts and Equipment — Electrical & Electronic

_____Ammeter Antenna,
_____aerial Antenna, loop
_____Battery, multiple cell
_____Battery, single cell
_____Bell
_____Capacitor, electrolytic
_____Capacitor, non-electrolytic
_____Capacitor, variable
_____Circuit breaker, 120V
_____Circuit breaker, 240V
_____Circuit fault indicator
_____Connector, split bolt
_____Connector, wedge grip
_____Connector, wire nut
_____Crimp lug
_____Diagonal cutters
_____Diode
_____Fuse, cartridge
_____Fuse, plug
_____Ground fault circuit interrupter (GFCI)
_____Head phones
_____Indicator light
_____Inductor, adjustable core
_____Inductor, air core
_____Inductor, iron core
_____Integrated circuit
_____Junction box
_____Lamp holder
_____Lamp holder with pull string
_____Lamp socket for three-way bulb
_____Lamp socket, normal on/off
_____Lamp, fluorescent
_____Lamp, high-pressure sodium
_____Lamp, incandescent
_____Lamp, mercury vapor
_____Lamps in parallel
_____Lamps in series
_____Lineman's pliers
_____Microphone
_____Needle nose pliers
_____Outlet, 240V 20A
_____Outlet, 240V 30A
_____Outlet, 240V 50A
_____Outlet, combination radio or TV and power
_____Outlet, duplex
_____Outlet, floor
_____Outlet, weatherproof
_____PC board
_____Plug, 240V 20A
_____Plug, 240V 30A
_____Plug, 240V 50A
_____Plug, grounded type
_____Plug, grounding
_____Plug, polarized
_____Relay, DPDT
_____Relay, SPST
_____Resistor
_____Resistor, potentiometer
_____Soldering gun
_____Soldering iron
_____Speaker
_____Splice, rat tail
_____Splice, Western Union
_____Spring clip
_____Switch and outlet combination
_____Switch, dimmer
_____Switch, double pole or DPST
_____Switch, four-way
_____Switch, push button
_____Switch, rotary
_____Switch, single pole or SPST
_____Switch, three-way or SPDT
_____Switch, weatherproof
_____Thermostat
_____Transformer, iron core
_____Volt meter
_____Volt-Ohm meter or multimeter
_____Watt meter
_____Watt-hour meter
_____Wire stripper

Parts missed _____ x 4 = _____Total Penalty Points

Contestant's Name _____ State _____ Number _____

Event No. III — Electric Energy Visual Presentation

Title of Presentation _____

Items under the major divisions I, II, and III should be scored. Space under "Judges' Comments" is for additional scoring suggestions and ideas.Time limit: 15 minutes maximum; 10 to 12 minutes preferred.

FACTORS FOR SCORING	MAXIMUM SCORE 5 POINTS EACH	JUDGES' COMMENTS
I. The Presenter (20 points)		
A. Appearance		
B. Voice		
C. Poise		
D. Grammar		
II. Presentation (35 points)		
A. Introduction		
B. Appropriate Method		
C. Verbal Presentation		
D. Teaching Aids		
E. Organization		
F. Audience View		
G. Summary		
III. Subject Matter (45 points)		
A. Selection of Subject		
1. Reason for Choice		
2. One Basic Theme		
3. Practical		
B. Information Presented		
1. Accurate		
2. Up-to-Date		
3. Complete		
4. Appropriate for Age and Experience		
C. Knowledge of Subject		
1. Principles		
2. Application		
TOTAL		

(Points to consider in scoring on back)

NOTE: The "average score" entered on the event scoresheet is the average score calculated from the multiple judges.

POINTS TO CONSIDER IN SCORING VISUAL PRESENTATION

I. The Presenter (20 points)
   A. Appearance — Neat appropriate dress, good posture. Is the presenter well groomed? Is the clothing he/she is wearing suitable for the task he/she is performing?
   B. Voice — Distinct, forceful, yet natural. Is the prsenter's voice clear with distinct enunciation, and reasonably strong? Is he/she enthusiastic?
   C. Poise — Calm, pleasant, confident. Does the presenter keep his/her composure even when something appears to go wrong or does go wrong? Does he/she have self-assurance, yet a pleasnt manner?
   D. Grammar — Correct, well-chosen words. Does he/she use correct grammar and has he/she chosen words that make the meaning clear?

II. Presentation (35 points)
   A. Introduction — Effective, interesting. This is an explanation of the presentation not an introduction of the presenter. Does it get the attention of the audience?
   B. Appropriate Method — Did the presenter choose a demonstration when an illustrated talk would have enabled him/her to do a better job?
   C. Verbal Presentation — Steps, illustrative material, and explanation coordinated. Does the presenter talk about what he/she is showing and explain the procedure? If information given is to fill time during the process, is it related to what is being shown?
   D. Teaching Aids — Equipment, models, charts, and supplies effective and well arranged. Did the presenter choose the teaching aid that would best tell the story? Were the charts and models neat, concise, and appropriate?
   E. Organization — Presentation well organized, steps clear and logical, not memorized. Is evidence shown that the presenter has planned his/her presentation?
   F. Audience View — Are aids large enough for audience to see? Does the presenter keep space in front of him/her open so that audience can see what he/she is doing?
   G. Summary — Are key points summarized?

III. Subject Matter (45 points)
   A. Selection of Subject
      1. Reason for Choice — Why did the presenter choose this particular subject?
      2. One Basic Theme — Is the presentation confined to one theme or is it so broad in scope that it cannot be covered in the allotted time?
      3. Practical — Is the subject important to the project area and to the presenter?
   B. Information Presented
      1. Accurate — Is the information correct? Could you follow directions given?
      2. Up-to-Date — Is it the most current information to which the presenter would have had access or is obsolete information given?
      3. Complete — Are all the steps in the process shown?
      4. Appropriate for Age and Experience — Is the presentation appropriate to the age and experience of the presenter?
   C. Knowledge of Subject
      1. Principles — Did the presenter understand principles and practices presented?
      2. Application — Did he/she understand application of information presented?