

Electricity

3 or 4 Member Team

IMPORTANT NOTE

Please read thoroughly the General CDE Rules Section at the beginning of this handbook for complete rules and procedures relevant to State FFA Career Development Events.

I. PURPOSE

The Oklahoma State Electricity CDE shall reflect the agricultural mechanics instruction provided to contestants in Oklahoma secondary agricultural education departments. The written exam, problem solving activity, and skills activities will assess the contestant's knowledge of electricity competencies.

II. EVENT RULES

- A. Team scores will be calculated using the highest three individual scores from the designated team. Only registered team contestants will compete for team awards.
- B. Cellular phones are not allowed in the event. If a CDE facilitator identifies a cell phone, that student is disqualified from the event.
- C. Any contestant that is deemed unsafe to themselves or to the other contestants will be disqualified from the event and their school will not be allowed to participate in the event the following year.
- D. The schools will be informed of the location of each event upon check-in. It is the students responsibility to ensure they are at the proper location at the appropriate time.

III. EVENT FORMAT

A. Team Makeup

1. Chapters may register one team consisting of three to four members and up to two individuals for the event.
2. All registered contestants will compete for individual awards.
3. Each individual will compete in three activities: a written exam with problem solving and two (2) skill activities. The test/problem solving will be limited to the skill activities for the event. One skill will be developed from the performance objectives listed below. The second skill will consist of electrical wiring equipment and component identification.

B. Safety and Equipment

1. Materials and Equipment Provided by Contestants

Each event contestant must adhere to the safe practices and appropriate work habits when performing required activities. Contestants are responsible and must provide all personal safety equipment including:

- a. Eye protection with clear lenses.
- b. Wire strippers
- c. Standard screwdriver
- d. Phillips screwdriver
- e. Needlenose pliers
- f. Linesman's or slip joint pliers
- g. Two number 2 pencils
- h. Any additional personal protection equipment that is appropriate for the activity.

C. Content

1. Written Examination (100 Points)

- a. Examination will be composed of 20 items, worth 5 points each.
- b. Examination questions will be developed primarily from the following areas:
 - National Electrical Code
 - Planning an electrical circuit
 - Selecting type and size of conductor
 - Calculating voltage drop
 - Determining electrical power requirements
 - Identifying the function of over-current and ground-fault protection.
 - Applying Ohm's Law and other application laws.

2. Practicum (100 Points)

- a. Contestants will perform a practicum demonstrating one of the following skills.
 - Wiring 120/240 volt service entrances.
 - Wiring switches and light fixtures.
 - Wiring duplex receptacles, standard, and switched.
 - Instilling electrical circuits and devices.

b. Non-metallic cable (Type NM) will be used for all wiring.

3. Identification (99 Points)

a. Contestants will identify 33 tools, supplies and other equipment associated with electrical wiring.

b. Each correctly identified item will be worth 3 points.

IV. SCORING

The team score is the composite of the three highest individuals.

Written Examination.....	100 points
Practicum	100 points
Identification	99 points
Total Points	
Individual.....	299 Points
Team	897

V. TIE BREAKERS

Individual ties will be broken based on the following criteria in the order they are listed: 1) practicum score, 2) examination score, 3) identification score. Team ties will be broken based on the following criteria in the order they are listed: 1) high individual, 2) total team practicum score, 3) total team examination score, 4) total team identification score.

VI. REFERENCES

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742-5355
Address: 220 Smithonia Road, Winterville, Georgia

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Richter, H. (2002). *Practical electrical wiring: Residential, farm, and industrial*.

Manhattan, KS: Park Publishing

2019 Oklahoma FFA Electricity Identification Reference List

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|-----|---|------|---------------------------------|
| 1. | 12- 3 WG Nm Cable | 49. | Receptacle Tester |
| 2. | 12-2 WG Nm Cable | 50. | Simplex Receptacle 15 Amp 120 V |
| 3. | 14-1 THNN Wire (TW) | 51. | Single Ear Conduit Strap |
| 4. | 15 Amp 120v Breaker | 52. | Single Pole Switch (S1) |
| 5. | 3 Gang Box | 53. | Spade Terminal |
| 6. | 3 Pole Breaker | 54. | Soldering Wire |
| 7. | 120 V circuit Breaker | 55. | Split Bolt Connector |
| 8. | 20 Amp 120 V Receptacle | 56. | Tamper Proof Type S Fuse |
| 9. | 20 Amp 200 V Receptacle | 57. | Terminal Lug |
| 10. | 240 V Breaker | 58. | THHN Wire (Single Conductor) |
| 11. | 3-way Switch (S3) | 59. | Time Delay Cartridge Fuse |
| 12. | 4-way Switch (S4) | 60. | Twist Lock Plug |
| 13. | 30 Amp 240 V Receptacle | 61. | Twist Lock Receptacle |
| 14. | Alligator Clip | 62. | Weather Head |
| 15. | Blade Fuse | 63. | Weather Proof Cover Plate |
| 16. | Cable Clamp | 64. | Wire Brushing for Metal Studs |
| 17. | Cartridge Fuse | 65. | Wire Nut |
| 18. | Chaffing Nut | 66. | Underground Conduit Sweep |
| 19. | Conduit Connector | | |
| 20. | Continuity Tester | 101. | Hex Key |
| 21. | Compression Connector | 102. | Analog Voltage Tester |
| 22. | Double Pole Double Throw Switch | 103. | Armored Cable Cutter |
| 23. | Double Pole Single Throw Switch
(DPST) | 104. | Bolt Cutters |
| 24. | Duplex Receptacle 15 Amp 120 V | 105. | Bolt Die |
| 25. | Edison Base Fuse | 106. | Bolt Die Stock |
| 26. | Metal Face Plate | 107. | Bottoming Tap |
| 27. | Flexible Metal Conduit | 108. | Box End Wrench |
| 28. | Flexible PVC Conduit | 109. | Cable Blender |
| 29. | Floor Box | 110. | Cable Cutters |
| 30. | Fork Terminal | 111. | Cable Ripper |
| 31. | GFCI Faceplate | 112. | Center Punch |
| 32. | GFCI Receptacle Adapter | 113. | Chuck Key |
| 33. | Ground Rod Clamp | 114. | Clamp on Amp Meter |
| 34. | Grounding Bar | 115. | Cold Chisel |
| 35. | GFCI Receptacle Tester | 116. | Common Screwdriver |
| 36. | Handy Box | 117. | Conduit Bender |
| 37. | Ground Clip | 118. | Combination Square |
| 38. | Lamp Base | 119. | Adjustable Open End Wrench |
| 39. | Ground Wire Nut | 120. | Cross Cut Hand Saw |
| 40. | Lock Nut | 121. | Current/ Circuit Tester |
| 41. | Motion Activated Switch | 122. | Diagonal Cutting Pliers |
| 42. | Nail In Handy Box | 123. | Easy Start Tape |
| 43. | Octagon Box | 124. | End Cutting Pliers |
| 44. | Piloted Switch | 125. | Fish Tape |
| 45. | Remodel Light Box | 126. | Flaring Tool |
| 46. | Raceway | 127. | Hacksaw |
| 47. | Rigid Metal Conduit | 128. | Hickey Binder |
| 48. | Rigid PVC Conduit | 129. | Knockout Cutter |

130. Level
131. Lineman's Pliers
132. Micrometer
133. Multi-tester
134. Needle Nose Pliers
135. Non-Contact Proximity Tester
136. Nut Driver
137. Offset Screwdriver
138. Open End Wrench
139. Phillips Screwdriver
140. Pipe Die
141. Pipe Die Stock
142. Power Wire Puller
143. PVC Cutting Pliers
144. PVC Heating Box
145. PVC Heating Blanket
146. Ratcheting Cable
147. Reciprocating Saw
148. Right Angle Electric Drill
149. Rip Hand Saw
150. Safety Glasses
151. Saw Set
152. Screw Holding Screw Driver
153. Soldering Iron
154. Speed Screwdriver
155. Speed Square
156. Step Drill
157. Tap Wrench
158. Tin Snips
159. Tongue & Groove Pliers
160. Torque Screwdriver
161. Triple Tapping Tool
162. Wire Caddy
163. Wire Gauge
164. Wire Pulling Grip
165. Wire Stripping Pliers
166. Wood Chisel