2021 SKILLSUSA MICHIGAN
CHAMPIONSHIPS TASK AND MATERIALS LIST
SKILL OR LEADERSHIP AREA: ELECTRONICS TECHNOLOGY

CONTEST LOCATION:
Virtual

RESUME:
Each student must submit a one-page printed resume by April 7, 2021 to: pkozlowski@soundoffsignal.com
Each student must submit a liability form in the conference LMS by April 7, 2021
Failure to do so will result in a 10-point penalty.

Testing
All Electronics contestants need to take the following tests. Failure to take these tests will result in NO POINTS for that section of the contest! If a contestant misses the written exam, they will still be able to participate on the practical exam.

- Between April 7-11, 2021 - PD Assessment (aka Leadership Test) on conference LMS
- By April 7, 2021 - Electronic Technical Assessment on conference LMS

NO PHONES PERMITTED
Calculators may be used.
Judge to send material list to each school.

Contest
April 16-17, 2021 Contest chair will schedule each school individually. Contest at student's career center/school. Judge/Contest Chair will travel.

TASKS THAT MAY BE PERFORMED

1. Components identification
    A) Through Hole
    B) SMT
2. Technical and SkillsUSA Professional Development Test
3. Proper use of test equipment
    A) DMM
    B) OSCOPE
    C) Funcgen - Global 2206
4. Apply troubleshooting techniques, within design
5. Breadboarding techniques
6. DC circuit design, construction and testing
7. AC circuit design, construction and testing
8. Transistor circuit design, construction and testing
9. Digital circuit design, construction and testing
10. Analog (op amp) circuit design, construction and testing
11. Analog to Digital/Digital to Analog Conversions, Memory Decoding
12. 555-Monostable, astable design/construction/testing
13. Soldering techniques/ Surface Mount Technology
14. Reading and understanding of manufacturer's spec sheets
15. Drawing circuit schematic from data sheets
16. PLD design

Electronics Technology

Task that may be performed:

1. Component Identification
   A) Through Hole
   B) SMT
2. Proper use of test equipment
   A) DMM
   B) Oscope
   C) Function Generator (Global 2206)
3. Written technical test - 50 Questions technical
   25 Questions skills USA (tie breaker)
4. Apply troubleshooting techniques within design (circuit design)
5. **Breadboarding** techniques (constriction, design, layout and neatness)
6. **DC circuits design,** constriction and testing
7. **AC circuits design,** construction and testing (RCL circuits Peak and/or RMS)
8. **Digital circuits design,** construction and testing
9. Reading technical manuals (understanding spec sheets)
10. Transistor design, construction and testing (NPN, PNP, SCR's, or TRIAC's)
11. Analog to digital / digital to analog conversion /memory
12. Analog (Op amp) design, construction and testing - 741, 318, 358, or 4011
13. Soldering / Desoldering techniques - SMT (Surface Mount Technology)
14. 555 - Monostable, astable design / construction and testing or other oscillators
15. Part of the contest...Drawing out the circuit, showing pin # and connections
16. PLD design – design and construct internal circuity of the IC

Electronics Technology

The contest will last approximately 4 hours and has been divided into three sections.

Section 1: Written exam consisting of 50 questions. Last year's covered basic topics from DC analysis to digital analysis. The last 10 Questions of the test will be on how to read date sheets.

Performed on Friday

Section 2: Design, construct, and analyze the operation of a predetermined circuit. The contestants will be furnished all pertinent data sheets. Troubleshooting was added to the contest.

Performed on Saturday

Section 3: Covers soldering techniques. The contestant will assemble a circuit Neatness, safety, and circuit operation will be judged ***Note: At State Surface Mount Soldering will be required.***

Performed on Saturday

Electronics Technology

Students Must Supply:
Assortment of hand tools, minimum tools:

1. Soldering iron (variable wattage), holder and sponge
2. Desoldering - Manual solder extractor **ONLY,** solder wick or solder sucker.
3. Needle nose pliers
4. Diagonal cutters
5. Wire strippers
6. Solder - 60/40 resin core, 22 gauge (about, small solder)
7. Logic probe (optional)
8. Safety glasses with side shields or goggles (must)
9. Test leads (Banana to 1C, Banana to Alligator, and Banana to Banana) - 2 sets
10. Solderless breadboard (jameco JE 24 or similar)
11. Assortment of wire - 22gauge (different color and lengths) for bread boarding
12. Pencil and/or pen
13. Pocket scientific calculator (non programmable)
14. Oscilloscope probe leads (BNC connectors) - 2 sets
15. Grounding straps - Banana end (wrist)
16. Tweezers, Xacto knife, and/or dental pick (SMT soldering)
17. Meter - DMM Fluke 77 (optional)
18. Static Mat (for breadboarding)