

CATEGORY B

SUBJECT:

ELECTRONICS

OBJECTIVE(S)

To acquire a basic knowledge and understanding in electronic principles and applications.

PREREQUISITES

Minimum age requirement: 14 years.

INSTRUCTORS/EVALUATORS

- Industrial Arts Teachers
- Amateur Radio Operators
- Electronic Technicians/Technologists

REFERENCES AND MATERIALS

- Reference texts in local and school libraries
- Technical colleges and Trade schools

CONTENT

Candidates must be able to explain or answer the following:

1. *Elementary Theory*
 - a) What are conductors and insulators?
 - b) Definitions and descriptions of electrical quantities.
 - c) Ohms Law and power calculations for resistances.
2. *Resistors, capacitors and inductors*
 - a) Definitions and descriptions.
 - b) Laws for combining components in series and parallel circuits.
 - c) How components behave under D.C. conditions.
3. *Alternating Current Circuits*
 - a) Concept of alternating current.
 - b) How energy storing devices behave under A.C. conditions.
 - c) Reactance and impedance.
 - d) Series and parallel resonance.
4. *Transformers - Construction*
 - a) Losses.
 - b) Voltage and impedance transformation.

5. *Electronic Devices*
 - a) Semiconductors.
 - b) Transistors.
 - c) Field Effect Transistors.
 - d) Visual Character Displays.

6. *Amplifiers*
 - a) Amplifier gain.
 - b) Class A, B, or C amplifier operation.
 - c) Feedback and neutralizing.

7. *Power Supplies*
 - a) Rectification circuits and waveforms.
 - b) Filters.
 - c) Fusing and protection.

8. *Electronic Circuits*
 - a) Oscillators.
 - b) Multivibrators.

9. *Digital Electronics*
 - a) Binary numbers and codes.
 - b) The AND, OR, and NOT logic gates.
 - c) The NAND and NOR gates.
 - d) The XOR and XNOR gates.
 - e) Combining logic gates.
 - f) TTL and CMOS gating circuits.
 - g) Flip flops and other digital devices

10. *Integrated Circuits*
 - a) Types.
 - b) Integrated components.
 - c) Linear IC applications.
 - d) OP Amps and multivibrators.

DURATION

No time limit.

CERTIFICATION

The Instructor/Evaluator must ensure an adequate level of understanding on the part of the candidate. Some form of a suitable electronic project (gadget) must be completed whereby the candidate can explain its operation and application.

CERTIFICATION OF SUCCESSFUL COMPLETION OF PROFICIENCY SUBJECT

ELECTRONICS

Instructors/Evaluators should carefully consider the age, ability and accessibility to resource materials of each candidate.

The candidate has completed the above content and meets the requirements to the satisfaction of the Instructor/Evaluator.

Name of Instructor/Evaluator: _____

Agency: _____

Address: _____ Tel #: _____

Instructor qualifications: _____

I certify that

_____ of _____
(candidate's name) (Division #)

meets the criteria of this proficiency subject, as laid out on the previous page(s).

Instructor/Evaluator (signature) Date

Divisional Superintendent (signature) Date