SOLAR ENERGY EQUIPMENT EXAMINATION

# of Questions	Minimum Passing Score	Time Allowed
80	56 (70%)	200 Minutes

CONTENT OUTLINE

Content Area	# Items Test
Swimming Pools	13
a. Site Survey and Collector Orientation	
b. Pool and Spa heating systems	
c. Installing Solar Collectors	
d. Piping Systems	
e. Attaching System Plumbing Components	
f. Connecting Electrical Control Systems	
g. Activating, Inspecting, and Troubleshooting Systems	
h. Demonstrating System Operation to Owners	
i. Complying with Safety Procedures and Building Codes	
Domestic Hot Water	25
a. Site Survey and Collector Orientation	
b. Solar Domestic Hot Water Systems	
c. Installing Solar Water Heating Systems	
d. Piping Systems	
e. Addressing Problems Caused by Water Conditions	
f. Installing Components Unique to Indirect (Closed Loop) Systems	
g. Commissioning Systems	
h. Servicing Systems	
i. Demonstrating System Operation to Owners	
j. Using Tools and Equipment	
k. Connecting Electrical Control Systems	
l. Complying with Safety Procedures and Building Codes	
Photovoltaics	40
a. Site Survey and Module Orientation	
b. Photovoltaic Systems to Meet End-use Requirements	
c. Designing Grid Tied Systems	
d. Designing Stand Alone/Non-grid Connected Systems	
e. Designing with Hybrid Systems	
f. Installing Photovoltaic Systems	
g. Commissioning Systems	
h. Using Photovoltaic Tools and Equipment	
i. Maintaining PV Systems	
j. Complying with Safety Procedures and Building Codes	

EXAMINATION STUDY MATERIALS

The reference materials listed below were used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. Except for Code books, you can base your answers on later editions of references as they become available. For Code questions, the examinations will be based only on the edition of the Code book that is listed.

This examination is OPEN book. The following references are allowed in the test room.

Code of Federal Regulations - 29 CFR Part 1926 (OSHA), with latest available amendments, U.S. Government Printing Office, (866) 512-1800 or https://www.osha.gov/lawsregs/regulations/standardnumber/1926
OR
Code of Federal Regulations - 29 CFR Part 1926 Selections by PSI, with latest available amendments, www.psionlinestore.com, (866) 589-3088

Solar Water and Pool Heating Design and Installation Manual, 2006, Florida Solar Energy Center, 1679 Clearlake Road, Cocoa, FL 32922-5703, (321) 638-1015,
http://www.nabcep.org/wpcontent/uploads/2013/08/FSEC_Solar_Water_and_Pool_ Heating_Manual.pdf

International Plumbing Code, 2021, International Code Council, 5203 Leesburg Pike, Suite 600 Falls Church, VA 22041, 7039314533, www.intlcode.org/

National Electrical Code, 2020, National Fire Protection Association, 1 Batterymarch Park, Quincy, Massachusetts 02169, (800) 344-3555, www.nfpa.org

Photovoltaic Systems, 3rd Edition, 2011, James Dunlap, American Technical Publishers, Orland Park, IL 60467-5756, www.atplearning.com

The Easy Guide to Solar Electric Part II Installation Manual, 2001, Adi Pieper, Adi Solar 209 Arroyo Salado, Santa Fe, NM 87508 www.adisolar.com

Uniform Solar Energy Code, 2018, International Association of Plumbing and Mechanical Officials, (IAPMO), 5001 East Philadelphia Street, Ontario, CA 91761-2816, www.iapmo.org

Candidates are responsible for bringing their own references to the examination center. Reference materials may be highlighted, underlined, **annotated**, and/or indexed prior to the examination session. However, references may not be written in during the examination session. Any candidate caught writing in the references during the examination will have the references confiscated and will be reported to the department. Furthermore, candidates are not permitted to bring in any additional papers (loose or attached) with their approved references. Any additional materials will be removed from the references and confiscated. References may be tabbed/indexed with permanent tabs only. Temporary tabs, such as Post-It notes, are not allowed and must be removed from the reference before the exam will begin.