

## 2006 IECC/Comm 63—Building Envelope &amp; Controls

1. What section of the International Energy Conservation Code lists U-Factors for different types of Windows and Skylights if the information from the manufacturer is not available?
2. What is the U-Value (U-Factor) for a swing steel door, 1-3/4" thick, containing a solid urethane foam core with a thermal break if information from the manufacturer is not available?
3. True or False: An alteration to an existing office building replaces single pane glass window with an aluminum frame and no thermal break,  $U=1.23$ , which covers 6 square feet, and a 1 3/4" thick steel door which incorporates a fiberglass or mineral wool core with steel stiffeners with no thermal break,  $U= 0.60$ , which covers 20 square feet (6 ft. 8 in x 3 ft).

The replacement glass window consists of double glass, argon filled between the panes, with an air space of 1/2", with an aluminum frame and no thermal break,  $U=0.69$ . The replacement door consists of a metal door consisting of a solid urethane foam core with a thermal break,  $U=0.19$ .

This meets the energy conservation requirements of the Commercial code associated with building alterations.

4. When attempting to apply the prescriptive building envelope requirements of IECC, which of the climate zones are the following counties located in: Brown, Dane, Milwaukee, & Ashland?
5. A multi-story apartment building located in Green Bay (Brown County) has parking in the "basement". The parking area will NOT be heated. What is the minimum R-value required for the floor assembly located between the unheated basement and the heated occupied floor above?
6. A multi-story apartment building located in Eau Claire (Eau Claire County) has heated parking in the "basement" which is 20 ft below grade. What is the minimum R-value required to be addressed on the basement wall assembly, and how far below grade must the insulation be located?
7. If vertical insulation, 48 inches in height, is to be used as unheated slab-on-grade insulation for an apartment building, what minimum R-value must the insulation have? Would the minimum R-value change for a heated Slab-On-Grade?
8. What section of the code provides an equivalent insulated metal assembly for wood framed assemblies in a low rise residential building?
9. What section of the code addresses the requirements for a sun room installed onto a condominium? In general, are the building envelope requirements more or less restrictive than for other portions of the building?
10. Name the two computer software programs that are accepted by the Dept. for use in demonstrating building envelope compliance for low rise residential buildings and commercial buildings?
11. What section(s) of the code addresses the need for a vapor retarder to be installed on the warm in winter side of cavity walls on apartment buildings and commercial buildings?
12. If the IECC requirements are not to be used for a commercial building, what national standard can be substituted for demonstrating compliance with building envelope, building mechanical systems, service water heating, or lighting? Are there limitations when taking such action?

13. What is the prescribed minimum R-value for a roof on a mercantile building in Milwaukee (Milwaukee County) with 1) continuous insulation entirely above deck; 2) metal buildings (with R-5 thermal blocks); and 3) attics located in zone 6?
14. What is the prescribed minimum R-value for an unheated and heated slab in Table 502.2(1) for a factory building located in Superior (Douglas County)?
15. Do the minimum R-values for walls, roofs, windows, doors, etc. change for either low rise residential buildings or commercial buildings based on the amount of window area on the building's exterior walls?
16. If a new office building located in Green Bay (Brown County) had a wood framed exterior wall involving an average R-value of  $R=13$ ; windows with a weighted average U-Factor of  $U=0.30$ ; windows with a weighted average shading coefficient of 0.40, then this design would meet the building envelope requirements associated IECC Tables 502.2 (1) & 502.3. True or False.
17. What section of the code addresses the need for dock weatherseals?
18. What section of the code addresses the need for a vestibule to be installed in a commercial building assuming that a listed exception cannot be met?
19. True or False: Setback thermostat controls are required in commercial buildings but not for low rise residential buildings.
20. True or False: Energy recovery systems are mandated by the code to be installed in individual fans systems with greater than 5,000 cfm of supply air AND which have a minimum 70% outside air supply.
21. What is the minimum R-value of the insulation required to enclose a 2 inch steam pipe?
22. True or False: A roof top system for use in heating and cooling a commercial building has a cooling capacity of 48,000 btu/hr. An economizer is needed to be installed, unless an exception has been met.
23. What section of the code addresses the need for heated pools to have a cover? If the water temperature exceeds 90°F, what minimum R-value must the cover have?