ERRATA for

PE Mechanical: HVAC and Refrigeration Practice Exam ISBN: 978-1-947801-39-4

Errata posted 04/01/2026

Revisions are shown in red.

Question 1:

Solar heat gain coefficient (SHGC):	North	South	West	East
Glass	47	77	215	215

SC = 1

E_t = 1 Btu/hr-ft^2

Ignore infiltration. The total heat gain (Btu/hr) through the windows for Room A is most nearly:

Solution 1:

Entire solution is replaced.

$$q = UA_{pf}(t_{out} - t_{in}) + (SHGC)A_{pf}E_t + C(AL)A_{pf}\rho C_p(t_{out} - t_{in})$$

Ignoring infiltration (air leakage) yields:

$$q = UA_{pf}(t_{out} - t_{in}) + (SHGC)A_{pf}E_t$$
$$= (3)[(1.1)(40)(20)] + (40)(215)(1) + (40)(215)(1) + (40)(47)(1)$$
$$= 21{,}720 \text{ Btu/hr}$$

Solution 16:

From psychrometric chart h_{ma} = 31.5 Btu/lb

h_{sa} = 23.8 Btu/lb

$$\text{Coil load} = 90{,}566 \text{ lb/hr } (31.5 - 23.8) = \frac{697{,}358 \text{ Btu/hr}}{12{,}000 \frac{\text{Btu/hr}}{\text{ton}}} = 58.1 \text{ tons refrigeration}$$

Alternate solution:

$$\text{Coil load} = 4.5 \times \text{cfm} \times \Delta h = 4.5 \times 20{,}000 \times (31.5 - 23.8)$$
$$= 693{,}000 \text{ Btu/hr} = \frac{693{,}000 \text{ Btu/hr}}{12{,}000 \frac{\text{Btu/hr}}{\text{ton}}} = 57.8 \text{ tons}$$

THE CORRECT ANSWER IS: B

ERRATA for

PE Mechanical Engineering: HVAC and Refrigeration Practice Exam

ISBN: 978-1-947801-39-4

Errata posted 04/01/2026

Solution 79:

$$\dot{w} = \dot{m}\,\Delta H, \text{ where } \Delta H = 60 \text{ ft}$$

$$\dot{m} = \rho\,\dot{Q}, \text{ where } \rho = 62.4 \text{ lbm/ft}^3$$

$$\dot{Q} = \left(\frac{200 \text{ gal}}{\text{min}}\right)\left(\frac{1 \text{ ft}^3}{7.48 \text{ gal}}\right) = 26.7 \text{ ft}^3/\text{min}$$

$$\therefore \dot{m} = \left(\frac{62.4 \text{ lbf}}{\text{ft}^3}\right)\left(\frac{26.7 \text{ ft}^3}{\text{min}}\right) = 1,668 \text{ lbf}/\text{min}$$

$$\therefore \dot{w} = \left(\frac{1,668 \text{ lbf}}{\text{min}}\right)(60 \text{ ft}) = 100,080 \text{ ft-lbf}/\text{min}$$

$$\dot{w} = \left(\frac{100,080 \text{ ft-lbf}}{\text{min}}\right)\left(\frac{\text{min-hp}}{33,000 \text{ ft-lbf}}\right) = 3.03 \text{ hp}$$

$$\dot{w} = \frac{3 \text{ hp}}{(0.75)(0.83)} = 4.87 \text{ hp} = 3.63 \text{ kW}$$

$$\text{Cost} = (3.63 \text{ kW})(8,000 \text{ hr})\left(\frac{\$0.06}{\text{kWh}}\right) = \$1,742$$