C46 mobile study guide

1 Therm=100,000 BTU
Energy to raise 1 lb H2O 1 deg F = 1 BTU
7.5 Gal/CUFT
V=IR & W=VI
8.33 lbs/gal or
12 gal=100 lbs. or
25/3 lbs/gal
$A = \pi r^2$
$a^2 + b^2 = c^2$
Trig. S=O/H, C=A/H, T=O/A (Some Old Hippie Caught Another Hippie Tripping On Acid)
S=sin, C=Cos, T=Tan,
O=opposite, A=adjacent, H=Hypotenuse
1-2 gal/SQFT of thermal collector
Storage of hot water equal to daily usage
20 gal per person average
3 CUFT/min/SQFT of Air collector
SRCC is Solar Rating & Certification Corp. & is for certifying hot water systems.
Black, red, blue etc. is hot
AWG smaller number is bigger except;
AWG biggest 0 then 00 then 000
Water spits in old solar system=air in line
Use nylon rope to hoist collector to roof
Warning lines not fall protection on sloped roof
Circuit protection required on circuit in garage
Steel is not compatible with aluminum
10 yr. warranty required for CA rebate
T&P is temp & pressure
Pressure relief on water heater responds to Temp & Pressure
36" clearance in front of elect panel
LP (Propane) causes frost bite!
LP is heavier than air
Cold tank in AM means poor insulation
Domestic hot water latitude plus zero
Space heating latitude plus 15 deg. tilt
Heat capacity=specific heat plus density
Loose fill insulation for old homes
Insulate on external walls
Galvanized can be in concrete
Brazing order=top,side,bottom
Pipe support, copper 10', iron 15', steel 25', plastic 4'
Hot rock solar system has stratification
Hardened copper more durable-can't be threaded
Local code trumps mfg.
Black paint radiates heat
C100 is programmable controller
Y-intercept 75% then slope=.8
Flexible cables need 4.5' support
Min. collector clearance is 1.5"
THHW is allowed underground
12 gauge wire carries 20 amps
Type L copper has bLue stripe & is for soLar
Type K copper is hard
PVC can't be for water supply
Fluid flow for collector .02 GPM/SQFT
Small holes cause clogging
Bolt array to manifold
Check solar fluid quarterly
No thermometer too close to pump
Differential thermostat delta 10-18 deg.
Fiberglass contraindicated with high heat
Collector at least 18" above ground
Drain to siphon 6"
Air to air is rock bed
Sun effect=solar through window
Air through riser 800 FPM
Collectors must be easily accessible
Auxiliary heater=100% recovery
Phase change=BTU storage plus loss
Polyurethane has higher R-value
Vermiculite & perlite has lower R-value
Platform/Western framing used in CA
Thermal is usually F and PV is usually C in deg
Slab on a grade is = or > 3.5"
Temp reduction factor in 100 watt module 89%
Long pipe run = greater temp differential
Wire measured in diameter, 1 mil=.001"
Contact cement for seams of insulation tubing
R-19 walls-sheathing=2x4 & R-11 insulation
Continuity test with ohmmeter parallel to deenergized system.
Ampmeter used in series
Connect voltmeter parallel to energized system
Forced warm air filters in duct
Heat loss is infiltration
Put bread in pipe to stop water
6' from skylight for fall protection
Foil wrapped pipe insulation for UV
>250V requires insulated gloves
Foot protection for objects falling on feet
Dry chemical fire retardant for hot asphalt
Battery must be vented
Warm air filter change monthly then quarterly
Heat pump cycle similar to AC
80 SF of collector to 40-80 SF of rock
2x6 studs for R19
Use rubber sole on roof
2 people carry a 4X10 collector
2 people carry on same shoulder
If pipe insulation's not UV resistant, use UV paint or tape.
Use nylon rope
After clearing gravel on roof locate center of bolt hole.
1.5" off roof for solar
At delta T=10 to 20 turn on pump
Rock has high heat capacity per pound
Black is absorber
To install on tile, remove tiles
No warning lines for 5:12 for fall protection
Specific heat of H2O is 1.00
A/C piping is copper
Corrosion=materials incompatible
Open bleed valves=release air
Gravity heater register at baseboard
Thermometer defective if oil furnace won't light
Drill hole through rafter < 2" from edge
Tempering valve mixes
Absorber converts
Addition adding to SQFT must comply with energy requirements.
Open loop draindown more likely to have air
Reduce energy bill 60% turn down thermostat
Recirculation freezes in a power outage
Major part of storage collector is collector
Pure oxygen can be used never
Subcontractors sharing conduit tell prime how much space/area they will need
Distance between supports for flex metal conduit is 4.5'
K is the hardest copper pipe
Pipe least effected by corrosion is plastic
Pipe can't be used as water supply is PVC
Blue stripe on pipe is L
Dissimilar metal leads to most corrosion
To calc gallons in pool length x width x depth x 7.5 gal/CUFT
Local codes take precedence over state & Fed.
If plans are slightly off, contact Prime/General
Correct order is:
1) design 2) permit 3) install 4) inspection
2" is closest you can come to edge of rafter when drilling hole for wire.
Double radius of duct and flow increases 4X
Thermal sensors work with milliamps
Minimal clearance in front of elec panel under 600V is 36"
Ventilated box used for 50V battery bank.
Blocking diode prevents reverse current from AC to DC.
Most dangerous about LP is burns on skin & it accumulates at floor level.
Chrome v. black collectors-chrome emits less
Isolation valves before and after pump
Most likely to freeze is chrome black
C-100 is storage temp high limit control
High efficiency is 75% y-intercept, .8 slope
Evaporated tube uses vacuum as insulator
Volume of pool effects heat loss least
Pitch pockets are discouraged; flashing best
Max live load 200 SQFT roof is 20 PSF
Don't use rubber flashing on tar & rock
Elec. Splice made inside box
Grounding first to make last to break
Circuit breaker on hot
White is grounded conductor
Green or bare is equip. grounding conductor