Job Designation	Knowledge Area	Subject Area	Task	
A/C	**Building Science (Fundamentals) This Section is Inclusive For All Designations**	Basic Terms & Definitions (to comprehend and use)	Airflow in buildings/ducts: CFM, CFM50, CFM25, ACHn, ACH50	
A/C			Combustion Efficiencies: AFUE, SSE	
A/C			Heat pump efficiencies: SEER, HSPF	
A/C			Room air-conditioner efficiency: EER	
A/C				
A/C				
A/C			Alternating/Direct Current	
A/C				
A/C			AFUE	
A/C			SEER/EER	
A/C			Heat Transfer: Conduction, Convection, Radiation	
A/C			HSPF	
A/C			Carbon Monoxide (CO)	
A/C			Effective leakage area	
A/C			FPM (feet per minute)	
A/C			Area weighted R-Value	
A/C			Spillage/Backdrafting	
A/C			Baseload/Seasonal Energy Consumption	
A/C			British thermal unit (BTU), BTU per hour (BTU/hr, BTUH)	
A/C			Condensation/condensate	
A/C				
A/C			Sones	
A/C			Pressure differential	
A/C			Temperature differential	
A/C			Efficiency	
A/C			Emissivity	
A/C			Watt-hour/Watt	
A/C			R value and U Value	
A/C			Ton of refrigeration	
A/C			Entrainment	
A/C			Total equivalent length	
A/C			Dehumidification/Humidification	

A/C			Inches of Water Column (iwc)/Pascals (Pa)	
A/C				
A/C			Internal gains	
A/C			Hydrostatic pressure	
A/C			Whole-house ventilation: natural and mechanical	
A/C				
A/C			Net free area	
A/C			Input capacity/Output capacity	
A/C				
A/C			Equipment efficiency descriptors	
A/C			Peak Electrical Demand	
A/C			Permeability and perm rating	
A/C			Vapor barriers/retarders	
A/C			Building ventilation	
A/C			Solar gain	
A/C			IAQ (indoor air quality)	
A/C			IEQ (indoor environmental quality)	
A/C			Psychrometrics	
A/C			Vented/Unvented combustion appliance	
A/C			Atmospheric/Fan-assisted draft	
A/C			Sealed/Open Combustion	
A/C			Upflow/Downflow/Counterflow	
A/C			Sensible/Latent Heat	
A/C			Static Pressure Drop, Total External Static Pressure	
A/C			Refrigerant	
A/C			Superheat	
A/C			Subcooling	
A/C			psia	
A/C			psig	
A/C			Thermostatic Expansion Valve	
A/C	**A/C or Heat Pump Systems and their interaction with other Building Systems (Intermediate)**	Principles of Energy, Air & Moisture	Thermodynamics	
A/C			Factors that affect insulation performance	

A/C			Wind-driven house pressurization/depressurization	
A/C			Natural and Mechanical driving forces of infiltration/exfiltration as well as	
A/C			Heat gain/loss	
A/C			BTU content of fuels	
A/C			Moisture transport mechanisims	
A/C			Principles of combustion	
A/C			Principles of refrigeration	
A/C	**A/C or Heat Pump Systems and their interaction with other Building Systems (Intermediate) continued**	Combustion Science	Combustion products: Carbon Dioxide (CO2), Carbon Monoxide (CO), Water Vapor (H2O)	**F**
A/C				**F**
A/C			Oxygen (O2)/Combustion air	**F**
A/C			Sulfur Dioxide (SO2)	**F**
A/C			Combustion process	**F**
A/C			Combustion air	**F**
A/C			Combustion appliance zone (CAZ)	**F**
A/C			Spillage/Backdrafting	**F**
A/C			Draft: Overfire/Chimney	**F**
A/C			Combustion appliance venting	**F**
A/C			Causes of CAZ depressurization	**F**
A/C			Worse Case Depressurization Test	**F**
A/C			Combustion Analysis	**F**
A/C			Steady State Efficiency	**F**
A/C			Effect of fuel overpressure/underpressure	**F**
A/C	**A/C or Heat Pump Systems and their interaction with other Building Systems (Intermediate) continued**	Building Components	Duct configurations and components	**F**
A/C			Structural components of residential construction	**F**
A/C			Thermal boundaries and insulation applications	**F**
A/C			Electrical components and safety considerations	**F**
A/C			Refrigerant delivery systems and safety considerations	**F**
A/C			Condensate system components and safety considerations	**F**
A/C			Bulk water management components (drainage plumbing gutters sumps etc)	**F**
A/C			Vapor barriers/retarders	**F**
A/C			Radiant barrier principles and installations	**F**

A/C			Understand/recognize heat and energy recovery ventilators	F
A/C			Understand fenestration types and efficiencies	F
A/C			Understand issues involved with basements crawlspaces and slabs	F
A/C			Understand issues involved with conditioned space	F
A/C			Understand issues involved with attics	F
A/C			Understand issues involved with attached garages	F
A/C			Understand issues involved with interstitial building cavities and bypasses	F
A/C			Understand issues involved with ventilation equipment	F
A/C			Understand basic heating equipment components controls and operation	F
A/C			Understand basic cooling equipment components controls and operation	F
A/C			Understand basic DHW equipment components controls and operation	F
A/C			Identify common mechanical safety controls	F
A/C			Identify insulation types and R-Values	F
A/C			Understand various mechanical ventilation equipment and strategies	F
A/C	**A/C or Heat Pump Systems and their interaction with other Building Systems (Intermediate) continued**	Conservation Strategies	Understand appropriate applications for fenestration upgrades including modficiations or replacement	F
A/C			Understand appropriate insulation and air sealing opportunities for upgrades based on existing conditions	F
A/C			Opportunity for ENERGY STAR lighting and appliances	F
A/C			Identify duct sealing opportunities and applications	F
A/C			Understand importance of air leakage control and remediation procedures	F
A/C			Understand importance of air leakage control in conjunction with insulation performance/ improvements	F
A/C			DHW conservation strategies	F
A/C			Heating & cooling efficiency applications	F
A/C			Proper use of available resources to determine heating and cooling equipment sizing distribution system sizing	F
A/C			Appropriate application of insulation on the duct/ pipe distribution system	F
A/C			Appropriate applications for sealed crawlspaces basements and attics	F
A/C	**A/C or Heat Pump Systems and their interaction with other Building Systems (Intermediate) continued**	Comprehensive Building Assessment Process	Understand/recognize areas/topic of customer complaints to determine in interview	F
A/C			Understand/recognize need for conducting appropriate diagnostic procedures	F
A/C			Interaction between mechanical systems envelope systems and occupant behavior	F
A/C			Understand basic mathematics & science	
A/C	**A/C or Heat Pump Systems and their interaction with other Building Systems (Intermediate) continued**	Design Considerations	Appropriate insulation applications based on existing conditions	F

A/C			Understand/recognize building locations where non-flammable materials must be used	F
A/C			Understand/recognize building locations where opportunities for retrofit materials and processes are	F
A/C			Understand climate specific concerns	F
A/C			Understand indoor environment considerations for the environmentally sensitive	F
A/C			Understand impact of building orientation	F
A/C			Understand impact of landscape drainage and site grading	F
A/C			Understand impact of shading on loads	F
A/C			Awareness for solar gain reduction in cooling climate	F
A/C			Awareness for solar gain opportunities in heating climate	F
A/C			Appropriate applications for sealed crawlspaces basements and attics	F
A/C			Determine basement air-sealing strategy dependant on the	F
A/C			Interpretation and application of blower door test results	F
A/C	**Measurement and Verification of Building Performance (Intermediate)**	Applied Diagnostics & Troubleshooting	Application of measured air leakage test results	F
A/C			Apply fundamental construction mathematics and unit conversions	F
A/C			Measurement of wet/dry bulb temperatures	F
A/C			Refrigerant charge analysis using superheat or subcooling method based on metering device	F
A/C			Measurement of liquid/suction line temperatures	F
A/C			Proper application for weighing in refrigerant change	F
A/C			System capacity calculation	F
A/C			Calculation of of target superheat/subcooling	F
A/C			Determine appropriate total system airflow	F
A/C			Procedures for properly evacuating refrigerant system and determining integrity of the system with a vacuum test	F
A/C			Non condensable/mixed refigerant test	F
A/C			Cleaning up a system that has been contaminated	F
A/C			Measurement and verification of no voltage drop across contacts	F
A/C			Measurement techniques for determining pressure drops across various refrigeration system components	F
A/C			Refrigeration cycle diagnostics	F

A/C	TXV Metering diagnostics	F
A/C	Calculate building tightness levels (minimum ventilation requirements)	F
A/C	Ventilation calculations and strategies	F
A/C	Proper methods for identifying/testing fuel leaks	F
A/C	Psychrometric evaluation	F
A/C	Spillage evaluation	F
A/C	Working knowledge of proper vent design and components	F
A/C	Draft testing	F
A/C	Blower door measurements	F
A/C	Duct leakage testing (total leakage and leakage to outside)	F
A/C	Pressure pan testing	F
A/C	CAZ depressurization	F
A/C	Carbon monoxide measurements	F
A/C	Basic pressure diagnostic procedures including understanding "With Respect To" (WRT)	F
A/C	Recognize contributing factors to health/safety and comfort problems	F
A/C	Recognize contributing factors to performance/reliability/durability problems	F
A/C	Recognize contributing factors to efficiency problems	F
A/C	Combustion gas analysis and data interpretation/application	
A/C	Measure and verify temperature rise/drop interpret results and apply corrective actions	
A/C	Inspect for areas containing moisture or bulk water in undesirable locations	
A/C	Check for proper duct system balance	
A/C	Measure and verify individual register airflow and compare to design specifications	
A/C	Coil inspection and appropriate actions	

A/C			Determine fan cycle settings and sequence of operation	
A/C			Visual evaluation of the distribution system	
A/C			Ensure proper polarity and grounding of the heating system	
A/C			Understand and inspect for basic electric safety	
A/C			Understand and inspect vent/chimney applications	
A/C	**Measurement and Verification of Building Performance (Intermediate) continued**	Tools and Equipment	Proper applications and use of temperature measuring devices	**F**
A/C			Appropriate equipment for identification of air distribution problems	**F**
A/C			Proper applications and use of blower door equipment	**F**
A/C			Fuel leak detection	**F**
A/C			Proper application and use of carbon monoxide analyzer	**F**
A/C			Methods of duct leakage testing & equipment	**F**
A/C			Proper application and use of a pressure differential measuring device	**F**
A/C			Proper application and use of refrigerant guages	**F**
A/C			Proper application and use of pressure and temperature charts	
A/C	**BPI National Standards and Project Specifications**	Comprehensive Building Assessment	Understand applicability content and intent of BPI National Standards	**F**
A/C			Understand applicability and intent of local/state/national	**F**
A/C			Understand applicability and intent of industry good/best practices	**F**
A/C			Understand applicability and intent of Home Performance with ENERGY STAR	**F**
A/C			Understand hazards associated with knob & tube wiring and be able to determine if it is live using basic electrical inspection techniques	**F**
A/C			Be able to specify materials and processes needed for building performance projects	**F**
A/C	**Optimizing the Installation, Operation, and Maintenance of Building Systems**	Comprehensive Building Assessment	Recognize need for airsealing measures and their impact on other building systems	**F**
A/C			Recognize need for mechanical equipment improvements	**F**
A/C			Understand blower door use for identifying critical air sealing areas	**F**

A/C			Apply blower door test results and Building Tightness Limit (minimum ventilation requirements) in development of improvement strategies	**F**
A/C			Understand needs for protective shielding and baffling for the preparation of insulation installation	**F**
A/C			Verify installed airflow rates of ventilation devices	**F**
A/C			Test and balance a supply/return ventilation system for optimal performance	**F**
A/C			Apply appropriate strategies for assuring a thermal barrier/air barrier alignment occurs	**F**
A/C			Working knowledge of various types of insulation and air sealing techniques and materials	**F**
A/C			Using combustion safety testing results for appropriate actions	**F**
A/C			Understand the impact on load associated with lighting and appliance retrofits	**F**
A/C	**Optimizing the Installation, Operation, and Maintenance of Building Systems (continued)**	Appliances and Lighting	Understand impact on load associated with lighting and appliance retrofits	**F**
A/C	**Professional Ethics, Conduct & Communications (Fundamentals) continued**	Conservation Strategies	Present options for comprehensive conservation strategies that are consistent with sound building science practices	**F**
A/C			Understand the implications of building performance improvements on occupants and other building systems/components	**F**
A/C			Understand the implications of adding insulation without airsealing	**F**
A/C			Understand the impact of installed actions on cost benefit analysis guidance	**F**
A/C			Understand the non energy benefits of building performance improvements	**F**
A/C	**Professional Ethics, Conduct & Communications (Fundamentals) continued**	Comprehensive Building Assessment	Elements of effective oral communcation with customer	
A/C			Elements of a documentation system	
A/C			Elements of effective written communication with customer	