

DACUM Research Chart for Air-Conditioning & Refrigeration Technician

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Duties		← Tasks				
A	Provide Customer Service	A-1	A-2	A-3	A-4	A-5
		Confirm appointment with customer	Determine customer requests	Provide fault information and action to be taken	Advise customer on preventive measures	Arrange follow-up appointment with customer
B	Install Air-Conditioning/Refrigeration System	B-1		B-2		B-3
		Calculate cooling load (e.g., power consumption)		Select suitable cooling capacity (e.g., brand, gas)		Obtain work approval
		B-9		B-10		B-11
Install commercial air-conditioning unit		Install domestic air-conditioning unit		Install air-conditioning insulation		
C	Maintain Air-Conditioning/Refrigeration System	C-1		C-2	C-3	C-4
		Prepare maintenance schedule (e.g., cooling tower)		Service fan coil unit	Clear drainage system (e.g., pipe/pans)	Service condensate wash, clean, grease
D	Analyse/Trace fault of Air-Conditioning/Refrigeration System	D-1	D-2	D-3	D-4	
		Determine correct usage	Determine power source	Determine fault of indoor unit (e.g., PCB)	Determine fault of outdoor unit (e.g., pressure, condenser, current, fan motor)	
E	Repair/Countermeasure Air-Conditioning/Refrigeration System	E-1	E-2	E-3	E-4	E-5
		Isolate power source	Prepare proper tools/instruments	Repair/replace motor	Repair/replace compressor	Repair/replace Printed Circuit Board (PCB)
		E-13	E-14			
Test-run air-conditioning unit		Prepare & submit service report ***				
F	Test / Commission Air-Conditioning/Refrigeration System	F-1	F-2		F-3	F-4
		Obtain technical specification	Inspect physical condition of air-conditioning unit		Test the air-conditioning unit	Check for abnormalities

* This task is applicable to Duty C and E

** This task is applicable to Duty C, E and F

*** This task is applicable to Duty B, C and F



B-4 Plan air-conditioning location	B-5 Prepare necessary tools and equipment *		B-6 Install air-conditioning electrical wiring		B-7 Install air-conditioning control	B-8 Install industrial air-conditioning unit
oning piping/	B-12 Conduct pressure test	B-13 Evacuate air-conditioning system	B-14 Conduct test run of air-conditioning system		B-15 Maintain housekeeping **	
ing unit (e.g., se, paint work)	C-5 Maintain make up tank	C-6 Assess air-conditioning performance				
E-6 Replace transformer	E-7 Replace sensor	E-8 Replace capacitor	E-9 Replace solenoid valve	E-10 Repair/ Replace heat exchanger	E-11 Repair/ Replace water pump	E-12 Replace magnetic contactor
F-5 Collect performance data	F-6 Assess performance of unit					

DACUM Research Chart for Air-Conditioning & Refrigeration Technician

Worker Behaviors

- Lifelong learning
- Listener
- Courteous
- Flexible
- Patient
- Responsible
- Independent
- Good attitude
- Honest
- Professionalism
- Presentable
- Humble
- Willingness
- Initiative
- Cooperative

Future Trends / Concerns

- Aware of occupational hazards
- School leavers shun away from air-conditioning/refrigeration job
- Multi-tasking
- Increasing use of computer control in air-conditioning/refrigeration systems
- Energy saving
- Increase use of ozone friendly refrigerant
- Use of Building Automation Systems for monitoring & control
- More replacement than repair of components
- Stringent electrical safety standard
- Higher standard of air quality

General Knowledge and Skills

- Computer knowledge and skills
- Communication skills
- Safety Skills
- Reading blueprint
- Basic design concept
- Understanding air-conditioning/ refrigeration system
- Electrical and Mechanical system
- Welding skills (Brazing)

Tools, Equipment, Supplies & Materials

- Brazing sets
- Welding sets
- Flaring & Swagging sets
- Manifold gauge
- Vacuum pump
- Megger meter
- Multimeter
- Thermometer
- Sling psychrometer
- Ammeter
- Barometer
- Noise level meter
- Tachometer
- Level meter
- Rubber caskets
- Ladder
- Vacuum cleaner
- Nitrogen
- Lifter
- Safety belt
- Helmet
- Goggles
- Respirator
- Ear-plug
- Refrigerants
- Soldering Lead
- Silver rod
- Insulation
- Welding rods
- Cloth