



Gas Safety

Syllabus

for

Class B Gas Fitter

Certificate of Qualification Examination

September 13, 2004

1. Prerequisites to obtain a class B gas fitter certificate of qualification

An applicant for a class B gas fitter's certificate of qualification must meet the requirements of the *Safety Standards Act* and applicable regulation.

2. Scope of class B gas fitter certificate of qualification

A class B gas fitter's certificate of qualification shall entitle the holder, while employed by a gas contractor, to install and alter:

- 2.1 atmospheric appliances with draft hoods which bear the certification mark of an approved testing agency;
- 2.2 other appliances and vents up to and including 220 kW, (750,000 Btu's);
- 2.3 piping and atmospheric vents.

3. Subject Areas of Study

	Percentage (%) on Exam
3.1 Safety Standards Act and applicable regulation	5%
3.1.1 Certificates of qualification	
3.1.2 Duties of licensed gas contractor and permit holder	
3.1.3 Requirements for permits	
3.1.4 Regulated product standards and certification	
3.1.5 Inspections	
3.1.6 Technical requirements	
3.1.7 Fees	
3.2 Gas Properties	5%
3.2.1 Sources, Contents (Natural & Propane)	
3.2.2 Specific Gravity	
3.2.3 Flammable Limits	
3.2.4 Ignition Temperature	
3.2.5 Flame Speed	
3.2.6 Toxicity	
3.2.7 State (liquid & gaseous)	

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	Percentage (%) on Exam
3.3 Combustion	5%
3.3.1 Perfect Combustion	
3.3.2 Products of Combustion & Volumes	
3.3.3 Air Required	
3.3.4 CO	
3.3.5 Air (Combustion, excess & dilution)	
3.3.6 Flue Gas Analysis	
3.3.7 Combustion Efficiency	
3.4 Regulators	5%
3.4.1 Principle of Operation	
3.4.2 Types-Service, System, Appliance	
3.4.3 2psig & Higher	
3.4.4 Relief & Vents	
3.4.5 Sizing	
3.4.6 Regulations	
3.5 Appliances	5%
3.5.1 B.C. Gas Code (Part 6 B149)	
3.5.2 Hot Air Furnaces & Duct Systems	
3.5.3 Boilers (Pool Htrs) & HW Heating	
3.5.4 Water Heating, Storage & Instantaneous	
3.5.5 Residential Gas Range	
3.5.6 Clothes Dryers	
3.5.7 Fireplaces (all types)	
3.5.8 Commercial Kitchen Appliances	
3.5.9 Make-up Air (Direct & Indirect)	
3.5.10 Infra Red Heating	
3.5.11 Conversion from other Fuels	
3.5.12 Miscellaneous Appliances	
3.6 Combustion Air Sizing	5%
3.6.1 Regulations	
3.6.2 Sizing under 400m	
3.6.3 Sizing over 400m	
3.6.4 Louver Sizing	

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	Percentage (%) on Exam
3.7 Venting Sizing	20%
3.7.1 Purposes	
3.7.2 Principles	
3.7.3 House as a System	
3.7.4 Draft Control	
3.7.5 Materials	
3.7.6 Sizing Tables & Notes	
3.7.7 Sizing Multiple	
3.7.8 Direct Vent	
3.7.9 Installation	
3.7.10 Fan, Forced & Induced	
3.7.11 Regulations	
3.7.12 Vent Sizing	
3.8 Burners	5%
3.8.1 Principles	
3.8.2 Lifting, Flashback & Problems	
3.8.3 Orifice Types	
3.8.4 Pressure & Orifice	
3.8.5 Orifice Tables & Sizing	
3.8.6 Input & Output	
3.8.7 Converting (Natural to/from Propane)	
3.8.8 High Altitude	
3.9 Meter Clocking	5%
3.9.1 Gas Meter Operation	
3.9.2 Metric Meters	
3.9.3 Clocking Formula	
3.9.4 Clocking Low Pressure	
3.9.5 Pressure Correction	
3.9.6 Clocking High Pressure	
3.10 Controls	5%
3.10.1 Electric Valves	
3.10.2 Non-electric Valves	
3.10.3 Combination Valves	
3.10.4 Water Heater Valves	
3.10.5 Gas Range Valves	
3.10.6 Flame Safeguard Systems & Purpose	
3.10.7 Thermocouples	
3.10.8 Pilot Generators	
3.10.9 Flame Rods	
3.10.10 Spark Control Modules	

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	Percentage (%) on Exam
3.11 Electrical	10%
3.11.1 Electrical Theory	
3.11.2 AC & DC	
3.11.3 Magnetism	
3.11.4 Circuits, Series & Parallel	
3.11.5 Symbols	
3.11.6 Diagrams, Schematic & Ladder	
3.11.7 Millivolt	
3.11.8 Meters & Trouble Shooting	
3.11.9 Polarity & Phasing	
3.11.10 Single Thermocouples	
3.11.11 Pilot Generators	
3.11.12 Millivolt Trouble Shooting	
3.12 Pipe Sizing	20%
3.12.1 Related Regulations	
3.12.2 Materials (Natural & Propane)	
3.12.3 Joining Pipe	
3.12.4 Flow & Pressure Drop	
3.12.5 Sizing Tables	
3.12.6 Sizing Low & 2psig	
3.12.7 High Pressure (Combined)	
3.12.8 Manual Shut-offs	
3.12.9 Testing Piping	
3.12.10 Cathodic Protection	
3.12.11 Pipe Sizing	
3.13 Servicing	5%
3.13.1 Wiring diagrams	
3.13.2 Controls	
3.13.3 Ignition Systems	
3.13.4 Trouble Shooting Electrical Problems	
3.13.5 Trouble shooting Venting Problems	
3.13.6 Trouble Shooting Appliance Operation	
3.13.7 Trouble Shooting Burner Operation	
3.13.8 Checking Regulators	
Total	100%
B.C. Electrical Code Regulation 2002	20 questions