

EVT I Study Guides (Rev 01-2025)

- **NFPA Study Guide for 1900, 1910, 1071**

EVT 1A Class Study Guide

- Identify the various courses required for EVT 1 from SFT
- Identify the certifications required for EVT 1 from ASE and DOT
- Identify additional experience requirements for Emergency Vehicle Technician 1 per SFT
- Understand the SFT task book process
- Identify the general knowledge requirements of an EVT 1
 - Fire agency's (SOPs) and rules and regulations as they apply to the EVT
 - Critical aspects of NFPA 1500, NFPA 1900, and NFPA 1910, as they apply to the EVT
 - Federal motor carrier safety regulations (49CFR)
 - Applicable federal, state, and local regulations
 - Interpretation and use of manufacturer specifications, inspection checklists, maintenance schedules, maintenance checklists, and agency SOPs
 - Selection of tools
 - Maintenance equipment and its usage
 - Workplace safety practices
- Identify the inspection and preventative maintenance duties associated with chassis systems
- Identify the inspection and maintenance duties associated with cabs bodies
- Identify the operational checks duties associate with a vehicle's low voltage electrical systems
- Identify the inspection, maintenance, and operational testing duties associated with
 - Tank systems
 - Line voltage systems
- Understand the difference between a road test and a performance test
- Identify road performance requirements of NFPA 1910 & Title 49
 - Out of service Criteria
- Identify record-keeping requirements of NFPA 1910 and the AHJ
- Understand how to perform apparatus and component operational tests
- Identify how to report defects and deficiencies and how to complete checklist and document findings
- Understand the function, construction, and operation of the steering system
 - Auxiliary steering systems
 - All wheel steering systems
 - Tractor-drawn aerials (TDA)

- Understand the function, construction, and operation of the suspension system
 - Conventional
 - Independent
 - Air
 - Spring Leaf
 - Coil
 - Torsion bar
 - Combination leaf/air spring
- Understand the function, construction, and operation of the brake system
 - Hydraulic
 - Air
 - Electric
- Understand the function, construction, and operation of the tires
- Understand the function, construction, and operation of the cooling systems
 - Engine
 - Transmission
 - Pump transmission
 - Fuel
 - Power steering
 - Compressed air foam system (CAFS)
 - Hydraulic
 - Auxiliary
 - Direct cooling
 - Indirect cooling
- Identify the principles of electricity and the operational theory of electronics
 - Ohm's law
 - Watt's law
 - Kirchhoff's law
- Electrical systems in a chassis
 - Low voltage
 - Line voltage
 - Electronic
- Understand the use of a DVOM in chassis inspections and how to test voltage drop.
- Understand the various classes of leaks
 - Class I
 - Class II
 - Class III
- Understand the various required performance testing
 - Axle weight
 - Service Brakes
 - Parking Brake
 - Low and Line voltage

Understand the potential problems associated with water and foam tanks and related components.

EVT 1B Class Study guide

- 1) The principles of magnetism
 - Magnetic fields
 - Impacts of magnetic fields
- 2) The principles of electricity
 - Kirchhoff's laws (Voltage and Amperge)
 - Watt's law
 - Ohm's law
 - Series and parallel circuits
- 3) Describe the principles of circuit analysis
 - Difference in potential (flowing vs. not flowing)
 - Parasitic drain
- 4) Circuit Protection
 - Fuses
 - Fusible links
 - Circuit breakers
 - PTC (positive temperature coefficient)
- 5) Meters and Tools
 - Carbon pile Load tester
 - Conductance / battery impedance testers
 - Digital voltmeter (DVOM)
 - Ammeter
 - Test Light
 - Digital storage oscilloscopes (DSO)
 - Scanners
 - Code readers
- 6) Circuit Problems
 - Open circuit
 - Short to power
 - Short to ground
 - Cross short
 - Excessive resistance
- 7) Starting and Charging Systems
 - Operation and Testing
 - Voltage
 - Amperage
 - Voltage Drop
- 8) Difference between Low Voltage Systems and Line Voltage Systems

EVT 1C Class Study Guide (Pumps)

Identify circumstances that initiate the inspection process

- Acceptance test of new vehicle
- Meeting manufacturer and/or AHJ inspection cycle
- Responding to a suspected or reported problem
- Acceptance test of repaired vehicle

Required tools/equipment

Test, calibration, and diagnostic

- Pitot gauge
- Flowmeter
- External test vacuum
- External pressure gauge

Function and construction of a pump.

Move water

- Move by volume
- Move by pressure

Identify types of pumps

- Centrifugal
- Positive displacement
- Fire Pump (Centrifugal) and Auxiliary Pump
 - Impeller
 - Volute
 - Cutwater
 - Clearance rings
 - Shaft
 - Bearings
 - Packing/seals
 - Housing/casing
 - Pump drive
 - Hydraulic
 - PTO (power take off unit)
 - Crankshaft
 - Midship
 - Fly wheel
 - Direct engine drive
 - Diesel
 - Gas
 - Single-stage pump
 - Multi-stage pump
 - Transfer valve and controls

Describe the function, construction, and operation of the valves

- Circulating valve
- Booster line cooling valve
- Ball-type valve
- Gate valve
- Butterfly valve

- Drain valve
- Bleeder valve
- Transfer valve
- Check valve
- Thermal valve
- Indirect cooling valve
- Valve actuators
 - Push/pull (manual) handle
 - Hydraulic
 - Pneumatic
 - Electric
 - Manual rotary/crank
- Pressure control devices
 - Internal and/or external relief valve
 - Engine governor
 - Controlled manually or electronically
- Valve operation
 - Manual
 - Air
 - Water
 - Electric
- Valve parts
 - Housing
 - Actuator
 - O-rings
 - Ball or butterfly/keystone
 - Seals

Describe the function, construction, and operation of the packing

- Adjustable
 - Rope
 - Pellets

Gauges,

- Types
- Usage

Indicator/Warning Systems

- Types
- Usage

Interlocks

- Types
- Usage