

**Reference Materials:** Note: This exam may contain some "accepted practice" type questions not found in the reference material listed below.

**Ambulance Performance Standards**, AMD 001-015, NTEA, AMD Division, 37400 Hills Tech Dr., Farmington Hills, MI 48331-3414 248-489-7090. Available for no charge at <http://www.ntea.com/WorkArea/showcontent.aspx?id=1346>

KKK-A-1822F **Federal Specification for the Star-of-Life Ambulance**, download for no charge at <http://www.ntea.com/WorkArea/showcontent.aspx?id=1352>

OSHA Publications #3186 *Model Plans and Programs for the OSHA Bloodborne Pathogens and Hazard Communications Standard*.

Online order form for OSHA Publications- <http://www.osha.gov/pls/publications/publication.html> or call 202-693-1999

NFPA 1911, **Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus**

National Fire Protection Association, Quincy, MA. To order call (800) 344-3555 or [www.nfpa.org](http://www.nfpa.org)

**Ford Ambulance QVM** Guide, [www.fleet.ford.com/truckbbas/non-html/qpg/2004/ambulanceguidelines04.pdf](http://www.fleet.ford.com/truckbbas/non-html/qpg/2004/ambulanceguidelines04.pdf)

General shop manuals, such as: Ford 1-ton chassis, Freightliner Medium Duty, International/Navistar Medium Duty

Any Material Safety Data Sheet

Any service manual for OBD-2, Class 1 Diagnostic Service Codes

### LEARNING OBJECTIVES FOR THE E-4 EXAM

#### 1. Definitions or Terms

- |                                       |                                  |                               |
|---------------------------------------|----------------------------------|-------------------------------|
| a. Ambulance                          | l. GAWR-gross axle weight rating | w. G.F.I.                     |
| b. Action area                        | m. Load management               | x. Traffic pre-emption device |
| c. Squad bench                        | n. Auto throttle                 | y. Dissimilar metals          |
| d. Curb weight                        | o. Gradeability                  | z. Electrolysis               |
| e. HVAC-Heating, Ventilation,&Air     | p. Payload                       | aa. Breakout box              |
| f. ALS-Advanced Life Support          | q. AMD Standards                 | bb. Hepa filters              |
| g. BLS-Basic Life Support             | r. Curb side                     | cc. Polyglycol                |
| h. Type I, II, III                    | s. Weight Distribution           |                               |
| i. APC Module-Auxiliary Power Control | t. Litter                        |                               |
| j. PCM- Power Control Module          | (1) Retention system             |                               |
| k. GVWR-gross vehicle weight rating   | u. Grab Rail                     |                               |
|                                       | v. Final stage manufacturing     |                               |

#### 2. Physical characteristics of an ambulance-Identify the design requirements as stated in KKK-A-1822E

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|--|-------------------------------------|
| a. Ground clearance & loading floor height | e. Ambulance types                  |
| b. Height, width & wheel base              | f. Ambulance class & configurations |
| c. Angle of approach & departure           | g. Vehicle performance              |
| d. Ramp breakover                          | h. Water spray test                 |

#### 3. Cab and Body-Describe maintenance and repair of the following;

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|---|---|
| a. Heatin, Ventilation, and A/C systems     | o. Visual & audio warning devices                 |
| b. Center cab console components            | p. Headlights and wipers                          |
| c. Electronic memory systems                | q. Power windows & locks                          |
| d. Two-way radio systems                    | r. Intercom systems                               |
| e. Master switch systems                    | s. Traffic pre-emption device                     |
| f. 120 volt AC systems                      | t. Electrical Wiring                              |
| g. Interior & exterior finishes             | u. Oxygen Systems                                 |
| h. Interior & exterior compartment lighting | (1) Retention system                              |
| i. Door, latches, hardware                  | (2) Outlets                                       |
| j. Windows & rear view mirrors              | v. Body construction & configuration              |
| k. Steps, step lighting & running boards    | (1) Squad bench                                   |
| l. Exterior lighting                        | (2) Restraints                                    |
| m. Corrosion control                        | w. Patient compartment sound levels               |
| n. Interior floor                           | x. Auto eject systems/shoreline power connections |

#### 4. Chassis-Describe principles of operation, maintenance, and repair of the following:

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|--|---------------------------------|
| a. Brakes                                  | c. Frame                        |
| (1) Hydraulic brake systems & fluid types  | (1) Inspection & alignment      |
| (2) Parking brakes and cables              | (2) Body & cab mounts           |
| (3) Anti-lock systems-wiring, bleeding,etc | (3) Motor & transmission mounts |
| (4) Brake assemblies                       | (4) Welding                     |
| (5) Brake Retarder installation            | (5) Trailer hitches             |
| b. Suspension                              |                                 |
| (1) Tires and wheels                       |                                 |
| (2) Steering gear & power steering         |                                 |
| (3) Springs & shocks                       |                                 |
| (4) Air suspension systems                 |                                 |

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- d. Power train & support systems
  - (1) Diesel engines
  - (2) Cooling systems
  - (3) Lube systems
  - (4) Fuel systems
  - (5) Air intake systems
  - (6) Glow plugs
  - (7) Exhaust systems
  - (8) Transmissions-oils
  - (9) Drive Shaft
  - (10) Differentials
  - (11) Electrical systems
  - (12) Engine trouble code checks
  - (13) Engine auto throttles

**5. Trouble Shooting & Diagnostics--**Understanding accepted practices of the following:

- a. Retrieving and interpreting diagnostic codes
- b. Interpret diagnostic charts and service manuals
- c. Understand schematic drawings
- d. Describe use of diagnostic equipment
- e. Road testing for driveability problems
- f. Transmission- fluid levels, contamination, linkage adjustments, and electronic controls
- g. Welding precautions

**6. Safety--**

6.1 Identify and describe the following safety procedures:

- a. Use of wheel chocks
- b. Proper lifting & support equipment
- c. Proper building ventilation
- d. Personal protective equipment(PPE)
- e. Right-to-know law
- f. Material Safety Data Sheets(MSDS)
- g. Blood borne pathogens
- h. Accepted safety practices
- i. SRS-supplemental restraint systems

6.2 NFPA 1915 "Out of Service" Criteria

- a. Hydraulic Brakes
- b. Engine Oil Leaks