Chapter 2

ASE-STYLE REVIEW QUESTIONS

1. Which type of vehicle construction uses a frame only in areas requiring extra support and a strong attachment point?
   1. Combination frame construction
   2. Semi-unitized stub rail construction
   3. First-generation unitized perimeter frame construction
   4. Fully unitized construction
2. Which parts of a unibody vehicle structure help to keep passengers safe in the event of a collision?
   1. Torque boxes
   2. Cross members
   3. Crush zones
   4. all of the above
3. Which of the following is not an advantage of unitized vehicle design?
   1. Increased passenger compartment safety
   2. Reduced vehicle weight
   3. Higher fuel efficiency
   4. Localized collision damage to components
4. Which of the following mechanical components are commonly found on newer unitized constructed vehicles?

a. Macpherson strut suspensions

b. Rack-and-pinion steering

c. Front-wheel drive

d. All of the these

5. In front-engine, rear-wheel drive unitized vehicles, the engine is mounted

a. longitudinally.

b. transversely.

c. between the passenger compartment and rear axle.

d. either A or B.

6. The \_\_\_ are the large, side body sections that extend from the side doors back to the rear bumper. They are welded in place and form a vital part of the rear body structure.

a. fenders

b. quarter panels

c. cross members

d. sail panels

7. \_\_\_ construction uses body parts welded together to form an integral frame.

a. Body-over-frame

b. Unibody

c. Welded

d. Bonded

8. Technician A gives a more thorough damage analysis to a unibody vehicle than to a conventional frame vehicle. Technician B says the conventional frame vehicle requires the more thorough inspection. Who is correct?

a. Technician A

b. Technician B

c. Both A and B

d. Neither A nor B

9. Which of the following are designed to stiffen a unibody structure?

a. Torque boxes

b. Frame horns

c. Cross members and bracing

d. Stone deflectors

10. Which of the following frame designs are no longer used in automobile manufacturing?

a. Perimeter

b. Stub

c. Hourglass

d. Ladder

11. In a front-engine, front-wheel drive unibody structure, what panel supports the top of the MacPherson struts?

a. Front cross member

b. Shock towers

c. Side rails

d. Radiator support

12. Technician A says that a unibody structure directly affects vehicle wheel alignment. Technician B says that a vehicle’s unibody structure does not affect vehicle wheel alignment. Who is correct?

a. Technician A

b. Technician B

c. Both A and B

d. Neither A nor B

13. What type of automobile structure is welded and/or bonded into one unit?

a. Frame body

b. Unibody

c. Stub frame

d. Nose frame

Essay Questions

1. What is the difference between body-over-frame construction and unibody construction?
2. Explain the terms *part* and *assembly*.
3. Describe the three body sections of a vehicle.
4. Aluminum has what advantages over sheet steel when used in automobile construction?

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Critical Thinking Problems

1. Why would you have to use different repair methods to repair a collision-damaged full frame car versus a unibody car?
2. From a repair standpoint, what are pros and cons of space frame construction?
3. A passenger vehicle will typically have more than \_\_\_\_\_ parts.
4. The majority of the unibody cars on the road today feature what drive train?
5. Body panels are commonly made of what three materials?
6. Bumper crash testing involves a \_\_\_\_\_ mph test to determine the amount of damage to the front and rear ends of vehicles.

Math Problems

1. If a car weighs 4,000 pounds (1,816 kg) and each tire has the same amount of weight on it (equal weight distribution), how much weight is on each tire in pounds and kilograms?
2. In the previous question, if a tire has 4 square inches touching the road, how many pounds of weight would be pushing down per square inch?