Chapter 67
Suspension System Fundamentals

Name: _________________________ Date: _____________
Instructor: ______________________ Score: _____________ Textbook pages 1243–1264

Objective: After studying this chapter, you will be able to explain the construction and operation of modern suspension systems.

Basic Suspension System

1. What is *chassis stiffness* and how is it measured?

2. Define the six basic parts of a suspension system.
   - Control arm:
   - Steering knuckle:
   - Ball joint:
   - Spring:
   - Shock absorber or damper:
   - Control arm bushing:

3. Independent suspension systems allow one wheel to move up and down with _____ on the _____.

4. What is *understeer*?

5. What is *oversteer*?

6. Explain *lateral acceleration* and how it is measured.
Suspension System Springs

7. Suspension system springs must ___ and ___ with bumps and holes in the road.

8. What are the four types of suspension system springs?
   (A) ____________________________
   (B) ____________________________
   (C) ____________________________
   (D) ____________________________

Suspension System Construction

9. A control arm holds the ___ in position as the wheel moves up and down.
   (A) steering knuckle
   (B) bearing support
   (C) axle housing
   (D) All of the above.

10. What is a strut rod?

11. Without shock absorbers, the vehicle would continue to ___ after striking a dip or hump in the road.

12. What is the advantage of gas-charged shock absorbers?

13. How does a gas-filled shock absorber operate?

14. What components does a strut assembly consist of?

15. How does a sway bar work?

16. A(n) ___ keeps the suspension system from hitting the frame structure.

17. If you hear a loud bang or thud when going over a large bump in the road, what might be happening and what might this be telling you?
18. Explain the construction, operation, and adjustment of a torsion bar suspension system.

19. Explain the construction/operation of a MacPherson strut suspension system.

20. Explain these three basic parts of an electronic height control system.

   Height sensor:

   Sensor link:

   Solenoid valve:

21. Explain these major parts of a typical electronic shock absorber system.

   Steering sensor:

   Brake sensor:

   Acceleration sensor:

   Mode switch:

   Electronic control unit:

   Shock actuators:

22. How can a sonar sensor be used in an electronically controlled suspension system?

23. A(n) _____ suspension system uses computer controlled hydraulic rams instead of conventional suspension system springs and shock absorbers.

24. What purpose do ball joints serve?

25. Spring _____ are limited by a vehicle’s shock absorbers.
26. Shock absorber __ occurs when the vehicle’s tire is forced upward upon hitting a bump.

27. Label the parts of the control arm.

(A) 
(B) 
(C) 
(D) 
(E) 
(F) 
(G) 

Suspension Leveling Systems

28. What is the main function of a suspension leveling system?

29. A(n) __ suspension leveling system uses air shocks and an electric compressor to maintain curb height.

30. What is a height sensor?

31. Identify the parts of the double-wishbone suspension system.

(A) 
(B) 
(C) 
(D) 
(E) 
(F) 
(G) 

Electronic and Active Suspension Systems

32. What is a mode switch?

33. An active suspension system uses computer-controlled ____ instead of conventional springs and shock absorber actuators to control ride characteristics.