Objective: After studying this chapter, you will be able to explain the operation of Anti-Lock Brakes, Traction Control, and Stability Control systems.

Anti-Lock Brake Systems
1. The Anti-Lock Brake system uses _______ _______ sensors, an _______, and a _______ unit to prevent skidding during hard braking.

2. How do good drivers get maximum braking effect on dry pavement?
_____________________________________________________________________________

3. Without ABS cars tend to slide to the _______ because of higher tire adhesion on the _______.

4. With ABS cars tend to travel ________________ during hard braking.

5. Identify the basic parts of the Anti-Lock brake system below:

   A. ___________________________________
   B. ___________________________________
   C. ___________________________________
   D. ___________________________________
   E. ___________________________________
   F. ___________________________________
   G. ___________________________________
   H. ___________________________________
6. Explain the function of each ABS component below:
   - ABS Control Module ______________________________________________________________________
   - Wheel Speed Sensor ______________________________________________________________________
   - Sensor Rotor _____________________________________________________________________________
   - Electro-Hydraulic Modulator __________________________________________________________________
   - Warning Light ___________________________________________________________________________

7. Wheel sensors produce an ____ signal for the ABS control module.

8. As the tire rotates faster the signal from the wheel speed sensor ____________.

9. The ________ in the ABS system stores high pressure fluid and caution should be used when servicing.

10. During hard braking a pulsation can be felt in the brake pedal. This is caused by the ________ ______ cycling pressure ______ and ______.

11. The ABS warning light is used to alert the driver to an ______ ______.

12. Identify the ABS system components below:

   ![ABS System Diagram]

   A. ___________________________  
   B. ___________________________  
   C. ___________________________  
   D. ___________________________  
   E. ___________________________

13. True or False  
   Technician A says the ABS system is normally functioning at all times (circle one). True   False  
   Technician B says the ABS system only functions during tire slippage (circle one). True   False

14. What test is being performed in the picture below?  

   ![Test Diagram]
Traction and Stability Control Systems

15. Describe how traction control uses ABS to keep a wheel from spinning:
________________________________________________________________
________________________________________________________________

16. What two things does a stability control system do?
________________________________________________________________
________________________________________________________________

17. What is understeer?
________________________________________________________________

18. What is oversteer?
________________________________________________________________

19. Matching

| ___. Yaw sensor | A. measures how sharply the steering wheel is rotated |
| ___. Lateral acceleration sensor | B. Measures how much side force is generated in a turn |
| ___. Throttle position sensor | C. Measures the direction of the thrust generated by vehicle movement |
| ___. Steering angle sensor | D. Measures how far the driver is pressing down on the accelerator pedal |
| ___. Brake pressure sensor | E. Measures the amount of hydraulic pressure produced by the driver pressing the brake pedal |

20. Understeer and Oversteer

Car A is an example of _________________.

Car B is an example of _________________.