Objective:
After studying this chapter, you will be able to perform an engine tune-up.

**Engine Tune-Up**
1. A modern tune-up is performed as __________ ________________ instead of a driveability problem.
2. Spark plug replacement for today’s engines aren’t scheduled until after __________ miles.
3. List some of the normal service and replacement items in a minor tune up.
   A. ________________________________
   B. ________________________________
   C. ________________________________
   D. ________________________________
   E. ________________________________
   F. ________________________________
4. List some of the normal service and replacement items in a major tune up.
   A. ________________________________
   B. ________________________________
   C. ________________________________
   D. ________________________________
   E. ________________________________
   F. ________________________________
5. List six (6) of the diagnostic tools used during a major tune up.
   A. ________________________________
   B. ________________________________
   C. ________________________________
   D. ________________________________
   E. ________________________________
   F. ________________________________
6. What are some of the **performance** factors affected by a tune up.
   A. 
   B. 
   C. 
   D. 
   E. 
   F. 

7. A modern OBD II automobile has a rough idle. Technician A says a tune-up will not correct the condition in most cases. Technician B says the rough idle is due to a defective or malfunctioning sensor, actuator, or ECM. Which technician is correct?
   - Technician A
   - Technician B
   - Both
   - Neither

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**General Tune-Up Rules**

8. Why is it important to gather engine and vehicle performance information before performing the tune-up?

9. Why is it important to bring the engine up to full operating temperature prior to diagnosing an operating condition?

10. Why is it important to maintain a vehicle’s service records?

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**Tune-Up Safety Rules**

11. OBD II automobiles require the battery be disconnected when performing vehicle service and maintenance. Why is this important?

12. List four (4) safety rules to follow when performing a tune-up:
   A. 
   B. 
   C. 
   D. 

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**Typical Tune-Up Procedures**

13. List the six (6) vehicles inspections performed during any tune-up:
   A. 
   B. 
   C. 
   D. 
   E. 
   F. 

14. List three (3) important steps in replacing spark plug wires:
   A. 
   B. 
   C. 

15. When replacing spark plugs in an aluminum engine, should the engine be warm or cold? Why?

16. List the correct tools used to remove and replace spark plugs:

17. What is the correct color observed on a spark plug removed from an efficiently operating engine?

18. What are two (2) steps that must be performed before installing a spark plug in an engine?

19. Spark plugs must be installed first _____ _____ , before

20. When installing spark plugs equipped with metal sealing washers the spark plug should be threaded in until it bottoms, then tightened an additional _____ to _____ turn.

21. What will happen if the spark plug wires are not put on the correct cylinder's spark plug?

22. What is the suggested replacement interval for one- and two-wire O₂ sensors? _____ For three wire sensors? _____

23. What is the recommended procedure for replacing an O₂ sensor? _____

24. A _____ test is performed during an engine’s life to check the engine’s mechanical condition with disassembly.

25. List the three (3) primary adjustments performed during a tune-up:
   A. 
   B. 
   C. 

Diesel Engine Tune-Up

26. Diesel engines require periodic maintenance similar to gasoline engines, but don’t have _______ _________ to replace or an _______ _________ to fail.

27. What are the typical service tasks performed during diesel engine maintenance intervals: A. 
   B. 
   C. 
   D. 
   E. 
   F. 
   G. 
   H. 

28. Describe/Define a maintenance interval: