**CDX Distance Learning**

**Exercise #28**

**Starter Circuit Diagnosis**

**Student Name:** Click or tap here to enter text.

Click or tap the check box next to the answer choice that best completes the statement or answers the question. Viewing the animations will be required to answer the following questions correctly. Read the question and use the link provided in each section to open the animation. Follow the directions in the questions and select the correct answer. When complete, close the animation window and move on to the next question(s).

[**Starter Animation 1**](http://d2jw81rkebrcvk.cloudfront.net/assetscdx2/202003%20-%20COVID/Assessments/MS/ANIM/EE/EE_StartTstAss01_C1/EE_StartTstAss01_C1/EE_StartTstAss01_C1.html)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1. Does the starter operate when the ignition is moved to the start position?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2. Is the battery fully charged?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 3. When the starter is activated, is the battery voltage still within specifications?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4. When the starter is activated, is the starter amperage within specifications?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5. What is most likely the issue with the starter system?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | The starter system is operating as designed |
|  [ ]  | b.  | The starter motor is faulty |
|  [ ]  | c.  | The park/neutral switch is faulty |
|  [ ]  | d.  | The battery has failed |

 |

[**Starter Animation 2**](http://d2jw81rkebrcvk.cloudfront.net/assetscdx2/202003%20-%20COVID/Assessments/MS/ANIM/EE/EE_StartTstAss02_C1/EE_StartTstAss02_C1/EE_StartTstAss02_C1.html)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 6. Does the starter operate when the ignition is moved to the start position?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 7. Is the battery fully charged?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 8. Is battery voltage available at the starter?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 9. Is there ground available at the starter?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 10. Is there voltage available at the starter solenoid control?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 11. Is there voltage coming out of the starter control relay to the starter solenoid control?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 12. Is there voltage from the battery to the starter control relay contact side?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 13. Is there voltage to the starter control relay coil from the park/neutral switch?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 14. Is there continuity between the starter relay coil terminals?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15. What is most likely the issue with the starter system?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | The starter motor is faulty |
|  [ ]  | b.  | The park/neutral switch is faulty |
|  [ ]  | c.  | The starter relay coil is open |
|  [ ]  | d.  | The starter relay is shorted internally |

 |

[**Starter Animation 3**](http://d2jw81rkebrcvk.cloudfront.net/assetscdx2/202003%20-%20COVID/Assessments/MS/ANIM/EE/EE_StartTstAss03_C1/EE_StartTstAss03_C1/EE_StartTstAss03_C1.html)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 16. Does the starter operate when the ignition is moved to the start position?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 17. Is the battery fully charged?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 18. Is battery voltage available at the starter?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 19. Is there ground available at the starter?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 20. Is there voltage available at the starter solenoid control?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 21. Is there voltage coming out of the starter control relay to the starter solenoid control?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 22. Is there voltage from the battery to the starter control relay contact side?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 23. Is there voltage to the starter control relay coil from the park/neutral switch?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 24. Is there continuity between the starter relay contact terminals when the ignition is turned to the crank position?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |
|  |  |  |

 |
| 25. What is most likely the issue with the starter system?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | The starter relay is shorted internally |
|  [ ]  | b.  | The contacts in the starter relay have failed |
|  [ ]  | c.  | The starter relay coil is open |
|  [ ]  | d.  | The starter motor is faulty |

 |

[**Starter Animation 4**](http://d2jw81rkebrcvk.cloudfront.net/assetscdx2/202003%20-%20COVID/Assessments/MS/ANIM/EE/EE_StartTstAss04_C1/EE_StartTstAss04_C1/EE_StartTstAss04_C1.html)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 26. Does the starter operate when the ignition is moved to the start position?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 27. Is the battery fully charged?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 28. Is battery voltage available at the starter?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 29. Is there ground available at the starter?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 30. Is there voltage available at the starter solenoid control?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 31. Is there voltage available from the starter solenoid to the starter motor?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 32. What is most likely the issue with the starter system?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | The starter motor is faulty |
|  [ ]  | b.  | The starter motor solenoid is faulty |
|  [ ]  | c.  | The starter relay coil is open |
|  [ ]  | d.  | The contacts in the starter relay have failed |

 |

[**Starter Animation 5**](http://d2jw81rkebrcvk.cloudfront.net/assetscdx2/202003%20-%20COVID/Assessments/MS/ANIM/EE/EE_StartTstAss05_C1/EE_StartTstAss05_C1/EE_StartTstAss05_C1.html)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 33. Does the starter operate when the ignition is moved to the start position?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 34. Is the starter properly operating?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 35. Is the battery fully charged?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 36. Is battery voltage available at the starter?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 37. Is there ground available at the starter?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 38. Is there voltage available at the starter solenoid control?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 39. Is there voltage available from the starter solenoid to the starter motor?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 40. What is most likely the issue with the starter system?

|  |  |  |
| --- | --- | --- |
| [ ]   | a.  | The battery has failed |
|  [ ]  | b.  | The starter motor is faulty |
|  [ ]  | c.  | The starter pull-in coil is faulty |
|  [ ]  | d.  | The starter hold-in coil is faulty |

 |

[**Starter Animation 6**](http://d2jw81rkebrcvk.cloudfront.net/assetscdx2/202003%20-%20COVID/Assessments/MS/ANIM/EE/EE_StartTstAss06_C1/EE_StartTstAss06_C1/EE_StartTstAss06_C1.html)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 41. Does the starter operate when the ignition is moved to the start position?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |
| 42. Is the starter properly operating?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 43. Is the battery fully charged?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 44. Is battery voltage available at the starter?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 45. Is there ground available at the starter?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 46. Is there voltage available at the starter solenoid control?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 47. Is there voltage available from the starter solenoid to the starter motor?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 48. What is most likely the issue with the starter system?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | The battery has failed |
|  [ ]  | b.  | The starter pull-in coil is faulty         |
|  [ ]  | c.  | The starter hold-in coil is faulty |
|  [ ]  | d.  | The starter motor is faulty |

 |

[**Starter Animation 7**](http://d2jw81rkebrcvk.cloudfront.net/assetscdx2/202003%20-%20COVID/Assessments/MS/ANIM/EE/EE_StartTstAss07_C1/EE_StartTstAss07_C1/EE_StartTstAss07_C1.html)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 49. Does the starter operate when the ignition is moved to the start position?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 50. Is the starter properly operating?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |
|  |  |  |

 |
| 51. Is the battery fully charged?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 52. Is battery voltage available at the starter?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 53. Is there ground available at the starter?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 54. Is there voltage available at the starter solenoid control?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 55. Is there voltage coming out of the starter control relay to the starter solenoid control?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 56. Is there voltage to the starter control relay coil from the park/neutral switch?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 57. Is there voltage to the park/neutral switch when the ignition is switched to the crank position?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | Yes |
|  [ ]  | b.  | No |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. What is most likely the issue with the starter system?

|  |  |  |
| --- | --- | --- |
|  [ ]  | a.  | The battery has failed |
|  [ ]  | b.  | The ignition switch is faulty |
|  [ ]  | c.  | The park/neutral switch is faulty |
|  [ ]  | d.  | The starter motor is faulty |

 |