QUESTIONS – Electrical

First & Last Name:

Using the information in www.gwellwood.com/subjects/mechanics/electrical/, the internet and other sources to answer the questions below.

There are NO Partial Marks - when it says "describe" – DESCRIBE
This booklet must be complete before you work in the shop

1. Using your own words, describe the following terms:
   a. Circuit

   b. Source

   c. Path

   d. Load

2. A complete path of wire for every circuit makes for a heavy vehicle (lots of wire). Why is the "ground" path of a circuit often connected directly to the chassis of the vehicle, instead of its own separate ground wire?

3. What are two tips for Battery Safety?
   a.

   b.

4. DEFINE:
    a. Voltage:

    b. Current:

    c. Resistance:

5. Sketch TWO subwoofers wired in PARALLEL (Two 4Ω subs in parallel (they resist half as much) creates a 2Ω load to the amplifier; powerful but risky - current splits in two and goes QUICKER through each half).

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6. Sketch TWO subwoofers connected in SERIES (two 4Ω subs in series create an 8Ω load (they resist twice as much) to the amplifier; gentle but quiet – kind of like trying to get past those TWO bullies in the narrow hallway. Just me? Oh. Oh dear….).

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7. Sketch TWO subwoofers connected SERIES with TWO MORE subwoofers in PARALLEL (creates a 4Ω load to the amplifier; perfect! – Think about what you just accomplished above, and combine them together!)

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8. What is the purpose of a Fuse?

9. What are two tips about fuses?
   a.

   b.

10. An "intermittent" problem (one that comes and goes, it's not consistent) is usually:

11. A circuit that acts freaking strange with no logic or reason to it is usually:

12. VIDEO QUESTION (Opus IVS): Describe how to perform a VOLTAGE DROP TEST on the circuit below?

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13. VIDEO QUESTION (Sub Experiment): What did you find interesting?

14. What is the type of acid in automotive batteries?

15. VIDEO QUESTION (Donut Media): A lead acid car battery consists of _____ cells.

16. VIDEO QUESTION (Donut Media): A different path to the positive side is called a _____.

17. VIDEO QUESTION (Donut Media): How do you reverse the chemical process of the battery?

18. VIDEO QUESTION (Donut Media): How do you make sure your battery doesn't run out of juice when you're driving around?

19. VIDEO QUESTION (Donut Media): What components stop AC and make it DC?

20. What is better: a Top Post battery, or a Side Post Battery?

21. What are TWO important SAFETY TIPS in working with batteries?

22. How do you do a Battery Hydrometer Test?

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23. In a Battery Hydrometer Test, what does the reading "1.260" tell us about the battery?
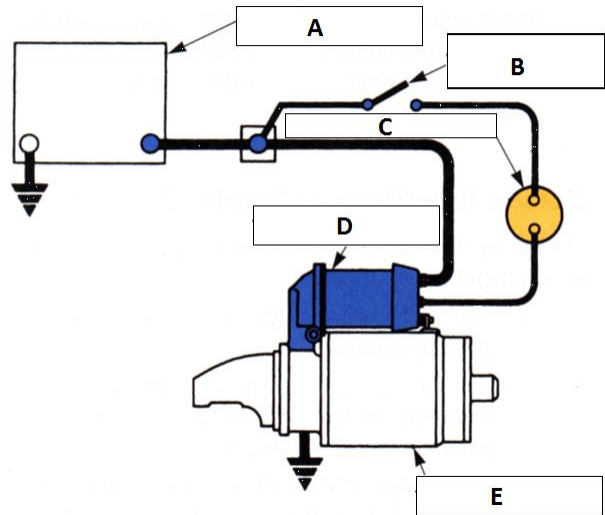
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24. Describe the steps to Load Test a battery:

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25. What mixture do you use to clean the battery with when maintaining it?

26. What is one of the most likely causes of poor starting?
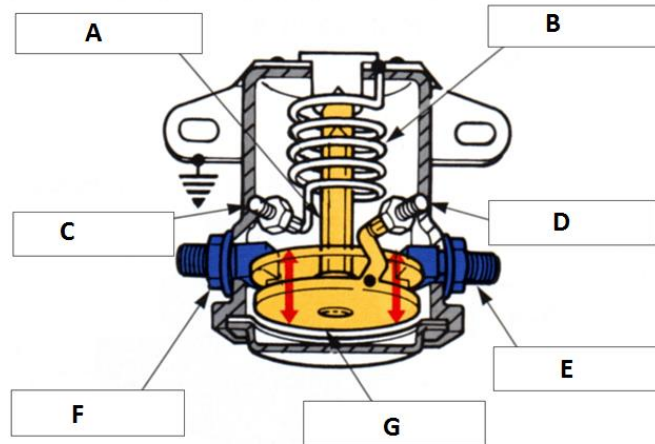
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27. Identify the components in the
    Starter Circuit:

    a.

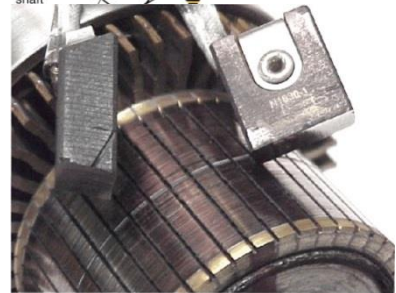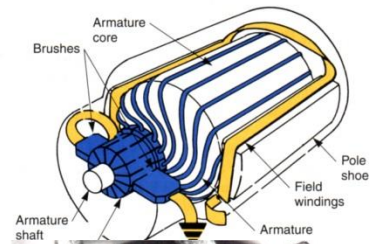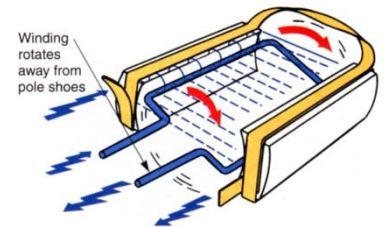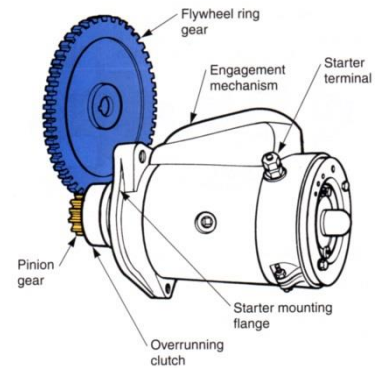   b.

    c.

    d.

    e.

28. Below is a starter solenoid. It uses ELECTRICITY which is MOVING through
    LOOPS of wire to create a MAGNETIC field. This magnetic field pulls the
    plunger up, connecting the two large electrical terminals together, sending large
    current to the starter motor.

    Fill in the missing names on the
    Starter Solenoid

    a.
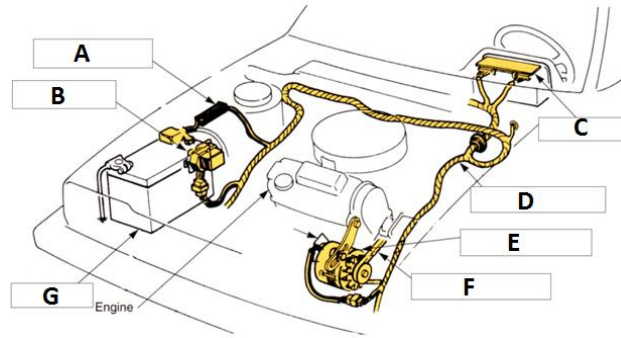
    b.

    c.

    d.

    e.

    f.

29. Describe in your own words how a starter motor actually TURNS using electricity (you will need to use the terms "ELECTRICITY", "MAGNETIC FIELD", "LOOPS OF WIRE", and "MOTION")

30. Fill in the missing names on the diagram:

a.

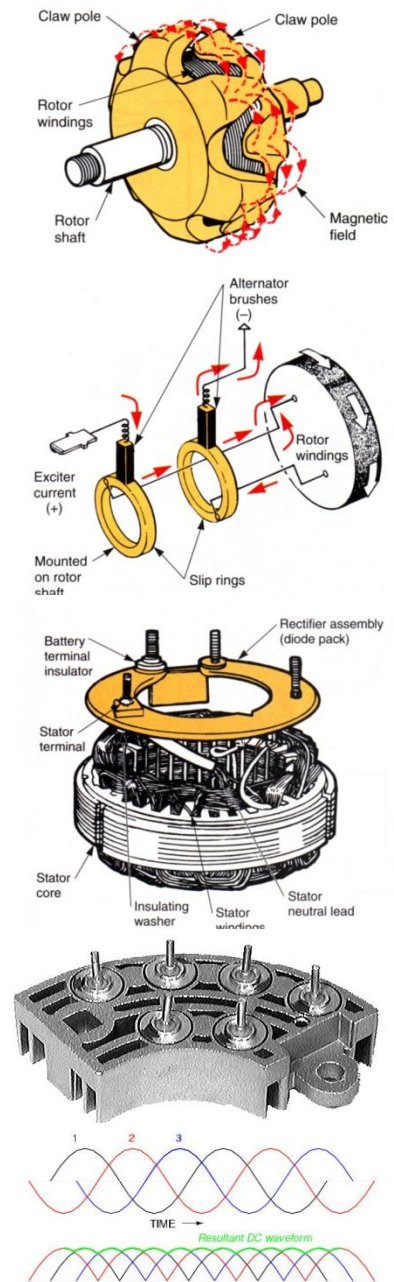b.

c.

d.

e.

f.

g.

A

B

C

D

E

F

G Engine

(Bonus marks if you can tell me what specific make and model of car is shown above)

31. Describe in your own words, the PURPOSE of the following:
a. Alternator:

b. Voltage Regulator:

32. Describe in your own words how an alternator actually creates electricity. . (you will need to use the terms "ELECTRICITY", "MAGNETIC FIELD", "LOOPS OF WIRE", and "MOTION")

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33. The voltage regulator will begin charging when voltage drops below
_____ Volts, and stop charging when voltage reaches
_____ Volts. The Voltage Regulator affects the
_____ inside the Alternator.