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| **Auto Upkeep (2nd Edition)** |  | Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Mid-Term Chapters 1-10 |  | Date \_\_\_\_/\_\_\_\_/\_\_\_\_ |
|  |  | Test Score \_\_\_\_ |

# Section 1: Selected Response

Directions: Place the letter that corresponds to the correct answer on the space provided.

 d 1. Most 4-cylinder engines are configured in this way.

1. V
2. Slant
3. X
4. Inline

 d 2. Which of the following can enter the bloodstream, reducing the flow of oxygen throughout the body?

1. nitrogen
2. particulate matter
3. carbon dioxide
4. carbon monoxide

 b 3. What summarizes the work that was completed on a vehicle?

1. estimate
2. repair order
3. Visa receipt
4. towing receipt

 a 4. This federal agency was created to prevent work related deaths, illnesses, and injuries.

1. OSHA (Occupational Safety and Health Administration)
2. Insurance Institute for Highway Safety
3. National Institute for Automotive Service Excellence
4. Department of Homeland Security

 c 5. For a fire to exist, it needs \_\_\_\_\_\_\_\_\_\_, heat, and fuel.

1. carbon dioxide
2. carbon monoxide
3. oxygen
4. nitrogen

 b 6. A/an \_\_\_\_\_\_\_\_\_\_\_\_ wrench is used to tighten a fastener to a specific amount of force.

1. adjustable
2. torque
3. combination
4. open-end

 a 7. This is used to help prevent spills when adding oil to the engine.

1. funnel
2. cup oil filter wrench
3. oil drain pan
4. grease gun

 d 8. Most automobiles have a \_\_\_\_\_\_\_\_\_\_\_\_\_ finish.

1. basecoat
2. primer
3. primer-basecoat
4. basecoat-clearcoat

 a 9. What provides shine and endurance to a finish, while also providing a protection from UV rays, pollution, and other damaging environmental conditions?

1. carnauba wax
2. car wash soap
3. Armor All®
4. aluminum polish

 d 10. Which of the following is a common multigrade engine oil?

1. 75W-140
2. 80W-90
3. 30W-60
4. 5W-30

 c 11. Which of the following is a type of automatic transmission fluid?

1. DOT 3
2. Dex-Cool
3. Dexron/Mercon®
4. 80W-90

 b 12. Electricity is the movement of electrons through a/an \_\_\_\_\_\_\_\_\_\_\_\_\_.

1. insulator
2. conductor
3. battery case
4. fiber optic line

 a 13. A starter converts \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. electrical energy to mechanical energy
2. mechanical energy to chemical energy
3. radiant energy to mechanical energy
4. thermal energy to chemical energy

 d 14. What would be an example of an SAE rating?

1. SM
2. ACEA
3. ILSAC
4. 5W-20

 a 15. What would be an example of an API rating?

1. SM
2. ACEA
3. ILSAC
4. 5W-20

 c 16. Technician A says carbon monoxide is a colorless, odorless, and poisonous gas. Technician B says proper ventilation is required when running a vehicle in a garage. Who is correct?

1. Technician A
2. Technician B
3. Both Technician A and Technician B
4. Neither Technician A nor Technician B

 c 17. Technician A says that is better to use a 6-point box-end wrench when possible to minimize the risk of stripping the head of the fastener. Technician B says that if you are in a tight spot you can flip the wrench since the ends are offset to continue to loosen or tighten a fastener. Who is correct?

1. Technician A
2. Technician B
3. Both Technician A and Technician B
4. Neither Technician A nor Technician B

 a 18. Technician A says that car wash soap is specially formulated to float away dirt and grime without harming the finish. Technician B says that it is OK to use dish wash soap since it is a good cleaner. Who is correct?

1. Technician A
2. Technician B
3. Both Technician A and Technician B
4. Neither Technician A nor Technician B

 a 19. Technician A says that manual transmissions commonly have a plug on the side of the transmission to check the level. Technician B says that manual transmissions are permanently sealed and checking the fluid is not necessary. Who is correct?

1. Technician A
2. Technician B
3. Both Technician A and Technician B
4. Neither Technician A nor Technician B

 a 20. Technician A says that a fully charged battery is less likely to freeze than a discharged battery. Technician B says that the state of charge has no impact on freezing. Who is correct?

1. Technician A
2. Technician B
3. Both Technician A and Technician B
4. Neither Technician A nor Technician B

 a 21. Technician A says that 5W-30 would be better to use than 20W-50 in most vehicles in cold weather conditions. Technician B says 20W-50 flows better than 5W-30 in cold weather. Who is correct?

1. Technician A
2. Technician B
3. Both Technician A and Technician B
4. Neither Technician A nor Technician B

# Section 3: Constructed Response

Directions: Use complete sentences to answer the following questions. The criteria below will be used to assess your answers. Maximum 4 marks per question.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Outstanding****(A = 4)** | **Very Good****(B = 3)** | **Acceptable****(C = 2)** | **Attempted****(D = 1)** | **Did Not Attempt (F = 0)** |
| Student demonstrates a complete understanding of the problem. Several details and examples were given to support the answer. The response was extremely well organized. | Student demonstrates a considerable understanding of the problem. Some details and examples were given to support the answer. The response was presented in a thoughtful manner. | Student demonstrates a partial understanding of the problem. Few details and examples were given to support the answer. The response was somewhat organized, but did not have smooth transitions. | Student demonstrates little understanding of the problem. Details and examples were not relevant or not given. The response was difficult to follow and confusing to the reader. However, the student made an honest attempt at answering the question. | No attempt was made to answer the question.  |

22. What are the four strokes in the four-stroke spark ignition engine? What occurs during each stroke?

Intake stroke – Intake valve is open. Exhaust valve is closed. Piston moves down. Air-fuel mixture enters the combustion chamber.

Compression stroke – Intake and exhaust valves are closed. Piston moves up. Air-fuel mixture is compressed.

Power (Combustion) stroke – Intake and exhaust valves are closed. A spark plug ignites the fuel. Piston is forced down by combustion. This is the stroke that provides the power.

Exhaust stroke – Exhaust valve opens. Intake valve is closed. Piston moves up, pushing exhaust gases out of the engine.

23. How would you choose an auto repair facility? Explain your answer.

Look for shops that display its employees’ ASE certifications. Ask your co-workers and friends for recommendations. Find a shop that specializes in the service you need. For example, some facilities specialize in suspension repair, tires, and alignments. Others may specialize in transmission repair and service. Once you find a shop you trust, build a rapport with the service writers and technicians. This relationship will help you if you ever get in a bind and need emergency service.

24. What are the different types of fire extinguishers? Give examples of what types of fires each put out and how they work.

**A-Type** A-type extinguishers put out wood, paper, cloth, rubber, plastic, and upholstery fires.

They do this by coating or lowering the temperature of the burning materials. ***A-Type: Trash - Wood - Paper***

**B-Type** B-type extinguishers put out gasoline, oil, grease, and paint fires. They do this by smothering the fire. Never put water on a B-type fire. Water will spread the fire. ***B-Type: Gasoline - Oil - Grease***

**C-Type** C-type extinguishers put out electrical fires. They do this by using a nonconducting agent. ***C-Type: Electrical***

**D-Type** D-type extinguishers put out combustible metal fires. They smother and coat the

metal with a special agent to put the fire out. ***D-Type: Combustible Metal***

25. What are the different types of service manuals? Explain the benefits and disadvantages of each.

The three main types of service manuals are online service manuals, consumer service manuals, and professional service manuals. Online manuals have the benefit of taking up less space with everything accessible through a computer station. Another benefit is that these manuals are constantly updated. Consumer service manuals are written for the average auto owner and often contain detailed photos for a specific vehicle. Consumer service manuals are not as detailed as professional service manuals. Professional service manuals, often containing several volumes, are specific to one year of a vehicle make and model. They cover almost every component and system with detailed illustrations, diagnostic checks, wiring diagrams, and step-by-step repair procedures.

26. What are the steps to repair a chip or scratch? Explain each step.

Step 1 - Start by removing any rust or flakes. A rust remover can be used to dissolve larger rust

areas. Step 2 - If you only have a small chip with surface rust, consider using a sanding pen. The tip of a sanding pen is small to minimize disturbing surrounding painted areas. Step 3 - Clean the area with soap and water. Allow time for it to completely dry. Step 4 - If rust was removed or metal is exposed you need to apply primer for the new paint to bond properly. Allow the primer time to dry. Read the label. Step 5 - Stir the touch up paint and test for a color match. Step 6 - Apply the paint with the cap applicator. Do not apply too much at once. Use several thin coats

if necessary to fill the chip or scratch. Allow each coat to dry before applying another coat.

Step 7 - When the paint is dry, if the original finish has a clearcoat, apply the clearcoat over the repaired area. Step 8 - Once the area has dried completely (wait at least a couple of days) use a polishing compound to blend in the repaired area. Step 9 - As a final step, protect the repaired area and the rest of your vehicle’s finish by waxing.

27. How do you check the oil on an engine? Explain the steps.

To check the engine oil, shut off the engine, apply the parking brake, open the hood, and look for the engine oil dipstick. To get an accurate reading it is best to check the engine oil when the engine is cold. The engine oil dipstick runs through a metal tube that is usually located on the side of the engine on rear-wheel drive vehicles or on the front of the engine on front-wheel drive vehicles. Refer to your owner’s manual if you have questions on the location of the engine

oil dipstick. Pull out the dipstick, wipe it off with a paper towel, reinsert it completely into the tube, remove again, and note the reading.

28. How do you change the oil and filter on an engine? Explain the steps.

After warming the engine to loosen contaminants and to thin the oil, shut it off and remove the ignition key. Wear eye protection and disposable gloves. Chock the wheels, lift the vehicle, and support it with jack stands. Or, use drive-on ramps, wheel chocks, and then jack stands. Apply the parking brake. Position an oil drain pan under the oil drain plug and filter. If the oil is extremely hot, allow it to cool some. Remove oil filler cap. Loosen the oil drain plug with the correct size wrench or socket and then carefully remove it by hand. While the oil is draining (at least 5 minutes) inspect the oil plug threads, gasket, and oil pan threads for cracks, damage, or wear. Purchase a new oil plug if needed. Use an oil filter wrench to remove the old oil filter and gasket. Be careful, the oil filter is full of warm oil. Set the old filter into the oil drain pan to drain. Use a rag to wipe off the filter mounting base, the drain plug, and the drain plug area after the engine oil has drained. Reinstall the oil plug finger tight by hand and then tighten to the recommended torque with a wrench. Do not cross-thread or over tighten. Apply a thin film of clean oil on the new oil filter gasket. Install the oil filter by hand by rotating it clockwise.

Once the gasket contacts the engine, tighten it further according to the instructions - usually ½ to 1 full turn. Remove oil drain pan and tools from under the vehicle. Lower the vehicle if you used a jack and jack stands. With the filler cap removed, use a funnel to add the correct amount and type of oil. Check owner’s manual for recommendations. Reinstall the oil filler cap. Start the engine and let it idle for a minute. Check that the oil gauge or light is normal. If you used drive-on ramps remove the jack stands and carefully back down the ramps. Shut off the engine for safety and inspect the filter and oil plug for leaks. If there are no leaks, wait a couple of minutes and then check the oil dipstick level. Be sure the car is on level ground to get an accurate reading. Correct if needed. Clean up and properly recycle your old oil and filter. Write down in your vehicle records the odometer reading and date of service.

PART A /21

PART B /28

TOTAL /49