

TERRY FOX AUTOMOTIVE

Chapter 39
Cooling System Fundamentals
Test

When you are done this test guess what you think you will receive for a mark below. If you are within 2 of your actual score you will receive 2 bonus marks

(remember part one answers are worth .5 each)

I think I will receive /43

Student name: _____

Date: _____

Block: _____

Part one: Matching

1. Match the Following Water pump parts with their correct definition: (1/2 mark each)

- | | |
|---------------------------|---------------------------------------------------------------------------------|
| _____ Water pump | A. Fits between the engine and pump housing to prevent housing coolant leakage |
| _____ Water pump shaft | B. Provides mounting place for belt pulley and fan |
| _____ Water pump bearings | C. Steel shaft that transfers turning force from the pump to the impeller |
| _____ Water pump seal | D. Iron or aluminum casting that forms the main body of pump |
| _____ Water pump hub | E. Disk with fan-like blades, the impeller spins and produces pressure and flow |
| _____ Water pump impeller | F. Prevents coolant leakage between pump shaft and pump housing |
| _____ Water pump gasket | G. Plain or ball bearings that allow the pump shaft to spin freely in housing |

2. Match the following terms with their correct definition: (1/2 mark each)

- | | |
|-----------------------------|-----------------------------------------------------------------------------------------------|
| _____ Molded hose | A. Hold the radiator hoses and heater hoses on their fittings |
| _____ Radiator hoses | B. Frequently used in the lower radiator hose to prevent its collapse |
| _____ Flexible hose | C. Carry coolant between the engine water jackets and the radiator |
| _____ Heater hoses | D. Has an accordion shape and can be bent to different angles |
| _____ Hose spring | E. Uses a worm gear that engages slots in the clamp strap to allow tightening around the hose |
| _____ Hose clamps | F. Small diameter hoses that carry coolant to the heater core. |
| _____ Worm drive hose clamp | G. Manufactured in special shape, with bends to clear the cooling fan and other parts. |

Part 2: Multiple Choice (one mark each)

3. Which of the following does not relate to radiator construction:
 - a. Core
 - b. Filler neck
 - c. Tanks
 - d. Impeller
4. For ideal cooling, this mixture of water and antifreezes is typical:
 - a. 30% water, 70% antifreeze
 - b. 50% water, 50% antifreeze
 - c. 70% water, 30% antifreeze
 - d. 80% water, 20% antifreeze
5. Which of the following system parts controls coolant flow?
 - a. Fan
 - b. Radiator
 - c. Thermostat
 - d. Temperature sensor
6. An engine's operating temperature is usually between:
 - a. 82°F and 99°F
 - b. 100°F and 120°F
 - c. 125°F and 150°F
 - d. 180°F and 210°F
7. A water pump normally mounts:
 - a. Under the engine
 - b. On the back of the engine
 - c. On the front of the engine
 - d. Any of the above
8. Which of the following may be used to prevent coolant leakage between the water pump housing and engine?
 - a. Gasket
 - b. RTV sealer
 - c. O-ring seal
 - d. Any of the above
9. Each of the following is a radiator component except:
 - a. Core
 - b. Petcock
 - c. Oil cooler
 - d. Bypass valve
10. Which of the following is not a radiator cap function?
 - a. Absorb heat
 - b. Seal radiator top
 - c. Pressurize system
 - d. Relieve excess pressure

11. Which fan type is used on front-wheel-drive cars with transverse engines?
 - a. Flexible fan
 - b. Electric engine fan
 - c. Engine powered fan
 - d. None of the above
12. What cooling system components circulates coolant around the engine?
 - a. Thermostat
 - b. Water pump
 - c. Radiator
 - d. Temperature sensor
13. When a thermostat is closed, which of these permits coolant circulation through the engine?
 - a. Bypass hose
 - b. Bypass valve
 - c. Both of the above
 - d. None of the above
14. Antifreeze serves each of these functions except:
 - a. Lubricate water pump
 - b. Prevent winter freeze up
 - c. Prevent rust and corrosion
 - d. Control engine temperature
15. Typical radiator cap pressure is:
 - a. 10 – 12 psi
 - b. 12 – 14 psi
 - c. 12 – 16 psi
 - d. 14 – 20 psi

Part 3: Fill in the Blank (one mark per blank)

16. By raising the pressure in the cooling system you raise the _____ of the coolant.
17. A temperature _____ on the engine is used to operate the temperature warning light.

Part 4: True or False (one mark each)

18. True or False – Not using a thermostat in hot weather is acceptable because the engine would run cooler.
19. True or False – Liquid cooling systems have replaced air cooling systems in automobiles.
20. True or False – Down flow radiators are used in small front wheel drive cars because they allow for a lower hood line.
21. True or False – Some oil transmission coolers are built into the radiator.
22. True or False – An open cooling system uses an overflow tank to collect and return extra coolant to the system during warm up and cool down.

Part 5: Short Answer (one mark each unless otherwise stated)

23. Why do we use a radiator shroud?

24. Explain how a thermostat works. (2 marks)

25. Why is a block heater helpful in a diesel engine?

26. List the 4 functions of a cooling system: (4 marks)

a. _____

b. _____

c. _____

d. _____

Part 6: Diagrams

27. Match the following areas/parts with the diagram to the right. (1 mark each)

_____ Inlet from radiator

_____ Housing

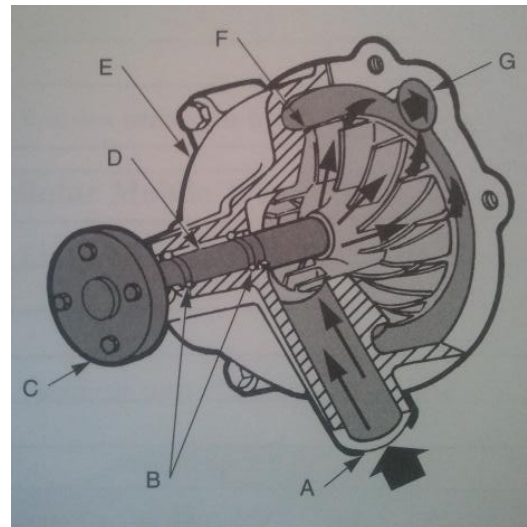
_____ Pump shaft

_____ Outlet to water jacket

_____ Impeller

_____ Fan Hub

_____ Sealed bearings



TOTAL MARK

/43