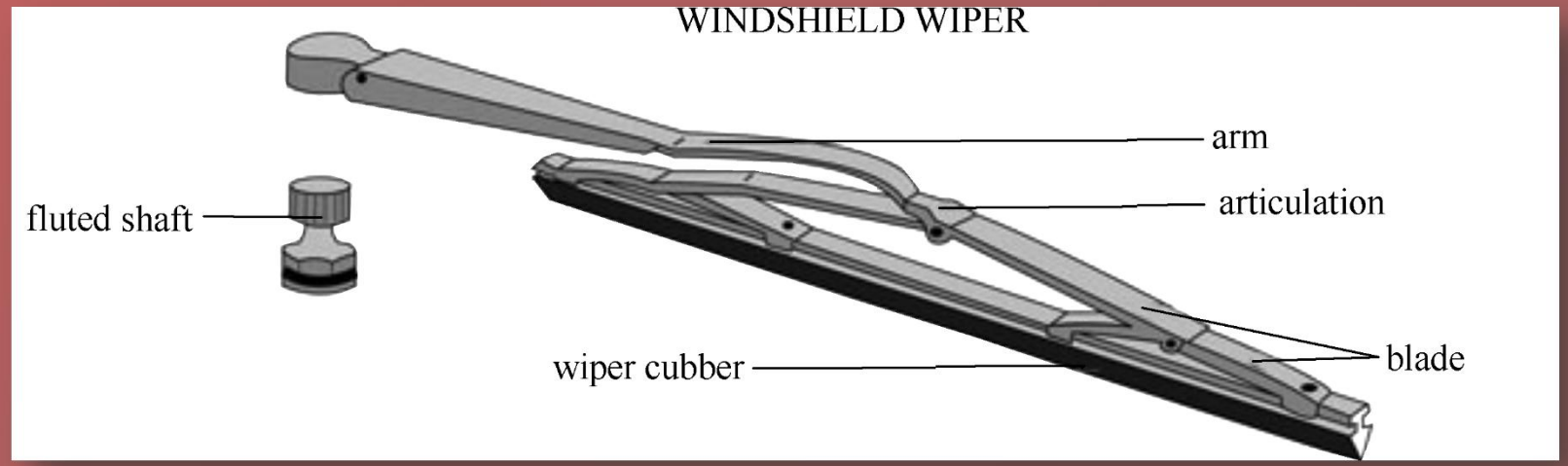
Unit 8 Automotive Steering System

The following is the windshield wiper and tire..
Sample



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English Terms	Explanations	Chinese
1. Windshield wiper	Mechanical sweeper that wipes water off a windshield	A. 风挡刮水器
2. Arm	Movable part	B. 刮水臂
3. Articulation	Part that attaches the wipes blade to the arm	C. 铰接口
4. Blade	Part that supports the wiper and is attached to the wiper arm	D. 刮水器架
5. Wiper rubber	Piece of rubber used to wipe the window	E. 雨刷橡胶
6. Fluted shaft	Grooved axle that rotates the wiper arm	F. 槽轴

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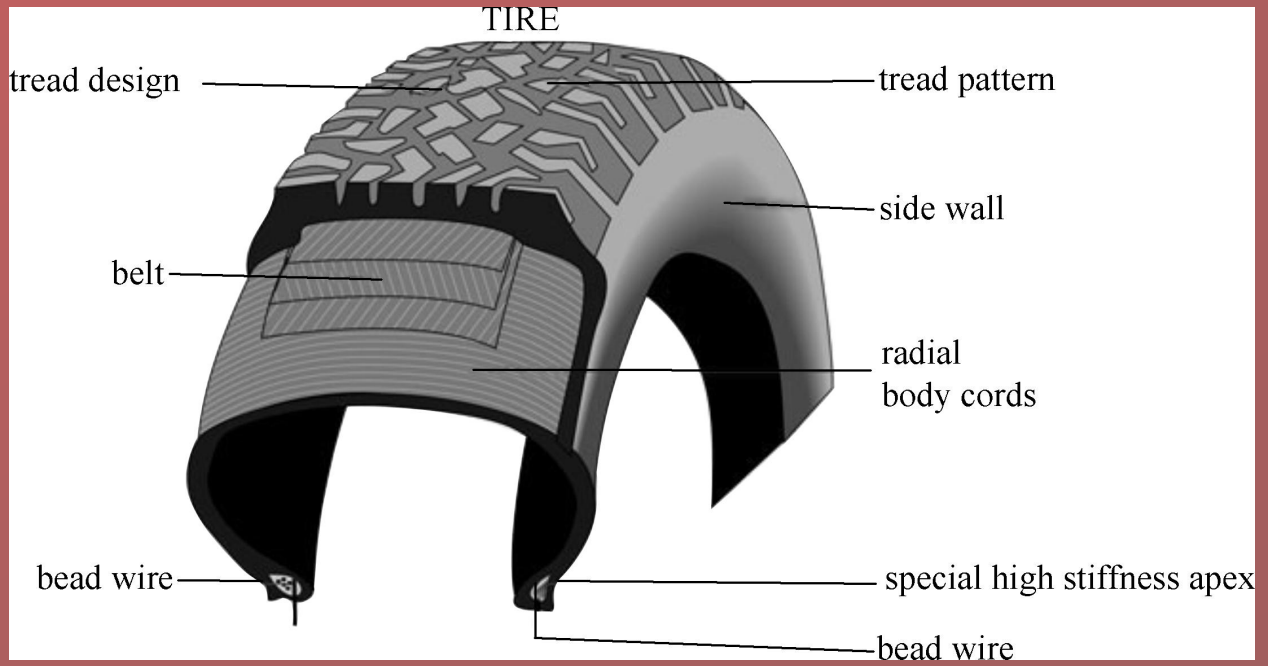
Sample 2



续表

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English Terms	Explanations	Chinese
3. Side wall	Side of the tire	（轮胎）胎侧
4. Radial body cord	arched frame of the tire	J. 子午线轮胎帘布层
5. Special high stiffness apex	filling material	K. 三角胶条
6. Bead wire	wire molding a tire	L. 胎圈钢丝
7. Belt	layers of different thicknesses that cover the frame of the tire	M. 带束层
8. Tread design	part of the tire that comes into contact with the road	N. 胎面花纹设计

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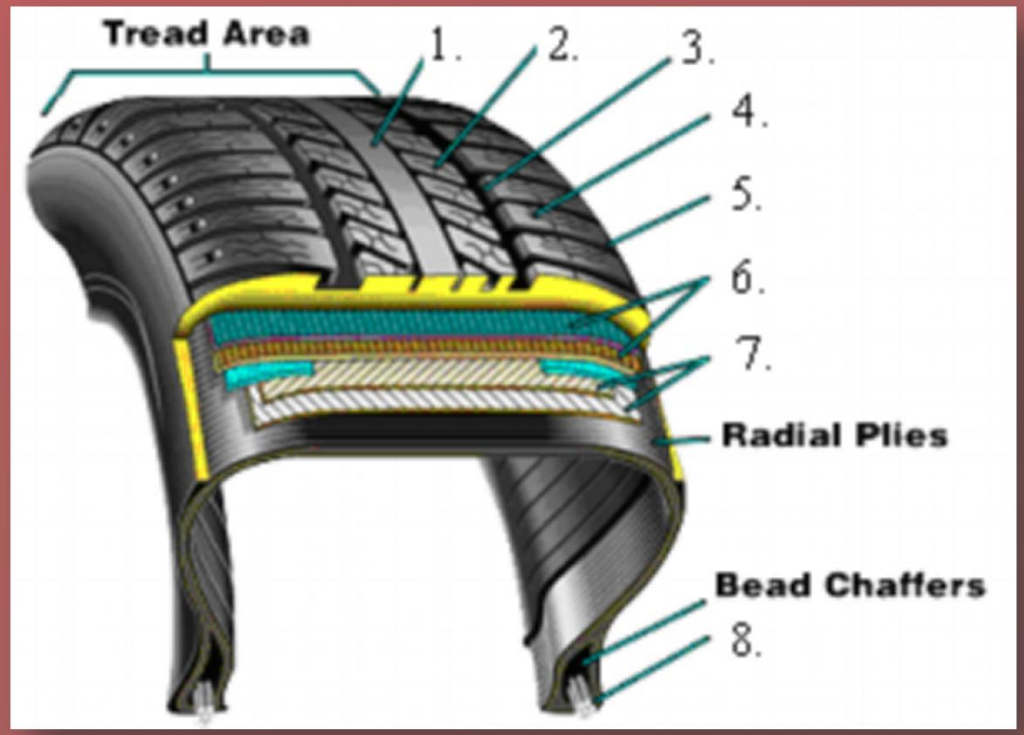
EXERCISE 5

Write down the name of the parts in English according to the figure below.



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EXERCISE 5

Write down the name of the parts in English according to the figure below.

1. Rib
2. Tread block
3. Grooves
4. Sipes
5. Shoulder
6. Cap plies
7. Steel belts
8. Bead

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EXERCISE 6

There are 10 incomplete statements here. You are required to complete each statement by choosing the appropriate answer from the 4 choices marked A, B, C, and D.

1. Which of the following parts doesn't belong to steering system?
D
_____.
A. Steering wheel B. Steering gear C. Linkage D. Anti-sway bar

2. Most large automobiles are equipped with recirulating-ball steering, because of its C _____.
A. low in friction and bad mechanical advantage
B. high in friction and good mechanical advantage
C. low in friction and good mechanical advantage
D. high in friction and bad mechanical advantage

3. The recirculating-ball steering system consists of D _____.
A. worm gear B. sector gear C. steering wheel D. all of the above

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EXERCISE 6

4. A ball nut rides on the worm gear and also engages with the _____C_____ on the pitman shaft.
A. tie rod B. track rod C. sector gear D. steering gear
5. Both recirculating-ball steering system and rack and pinion steering system have _____B_____.
A. worm gears B. tie rods C. pitman arms D. sector gears
6. Which of the following is Not true? D
A. Recirculating-ball steering can be either power-assisted or non-power.
B. A pitman shaft is mounted in the box in a position 90° to the worm gear.
C. Rack and pinion steering is almost always used with a McPherson strut suspension system.
D. Recirculating-ball steering can more accurately control wheel direction, making the steering more responsive than rack and pinion steering.

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EXERCISE 6

7. Which of the following parts doesn't belong to hydraulic power steering system? ___D___.
A. Pump B. Relief valve C. Steering gear box D. Motor
8. Which is more efficient, hydraulic power steering or electric power steering? ___B___.
A. Hydraulic power steering B. Electric power steering C. They are the same. D. It depends.
9. Which of the following sensors is applied in electric power steering system? ___A___.
A. Torque sensor B. Knock sensor C. Oxygen sensor D. Coolant temperature sensor
10. The ___D___ will collapse if the driver is thrown against the wheel in a collision.
A. steering wheel B. steering gearbox C. steering linkage D. steering column

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Troubleshooting Guide

Sample 1

Symptom: Steering wheel is hard to turn:

Description of the problem: You find that it's getting more difficult to turn the steering wheel. It feels like something is binding or dragging. This may or may not happen suddenly or get worse over time.

Probable Causes:

1. Low tire pressure.
2. The wheels are out of alignment.
3. The power steering box or rack or power steering pump is bad.
4. The fluid level in the power steering reservoir is low.
5. The power steering drive belt is damaged or broken.
6. The steering gear needs to be lubricated or repaired.

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Troubleshooting Guide

Sample 2

Symptom: Hard steering:

Description of the problem: You notice it takes much more strength to turn the steering wheel. This is especially noticed when you are trying to park. The problem seems to be getting worse.

Probable Causes:

1. Low tire pressure.
2. The steering gear needs to be lubricated.
3. The wheels are out of alignment.
4. A part of the steering linkage is damaged and doesn't move freely.
5. Your steering box needs to be adjusted.
6. You have a problem with the power steering pump.

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Exercise 7

This part is to test your ability to organize the material in logical order.

Symptom: Power steering doesn't seem to be working:

Description of the problem: It takes a lot of effort to turn the steering wheel. In fact, at low speeds you can hardly turn it. The problem is less obvious at high speeds simply because you need to move the steering wheel less at those speeds. The problem may have occurred suddenly.

Probable Causes:

1. No fluid in the power steering reservoir.
2. You have **a bad power** (a bad power, a good power) steering pump.
3. The power steering drive belt is **broken** (broken, rotten).
4. The fluid in the system is contaminated and needs to be flushed and refilled with fresh fluid.
5. You have a **steering linkage** (lubrication system, steering linkage) problem.
6. There is a **leak** (leak, rust) in the power steering lines.
7. Low tire pressure.

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Talking about the Steering System

Sample Dialogue 1

A: Could you give me a brief account of the steering system?
B: Certainly. In fact, the steering system plays an important role in driving the car.
A: Well, what does the steering system consist of ?
B: It mainly consists of steering wheel, steering gears, linkages and other components.
A: OK. What is the function of the steering system?
B: The steering system is used to control the direction of a car's motion and makes driving much more pleasurable, comfortable and safer.
A: Well, I know. Thank you for your information.
B: You are welcome.

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Talking about the Steering System

Sample Dialogue 2

A: I heard that there are two basic types of steering systems on cars today. Would you like to tell me something in detail?

B: Sure. They are recirculating ball steering and rack and pinion steering.

A: Any differences between them?

B: Yes. The recirculating-ball steering can be either power-assisted or non-power. But rack and pinion is almost always power-assisted. On the other hand, recirculating-ball steering is applied to many trucks and SUVs today. Most large automobiles are equipped with a recirculating-ball steering gear; however, rack and pinion steering mechanisms are used in many modern cars.

A: Well, what are their respective advantages?

Sample Dialogue 2

B: The recirculating-ball steering is very low in friction and provides a good mechanical advantage for a heavy vehicle. It uses a series of links and arms to keep both wheels turning in the same direction at the same time.

A: How about rack and pinion steering?

B: The advantage of rack and pinion steering is relatively simple and the cost is low. And it has a much better direct steering feel for the driver. By reducing the number of parts and pivot points, it can control wheel direction more accurately.

A: I see, it is very kind of you to tell me so much.

B: My pleasure.