

## Вступ

Навчально-методичний посібник з англійської мови «Розвиток навичок усної мови з використанням спеціальної термінології для студентів, магістрів та аспірантів ТМ-факультету» складається з дванадцяти тематичних уроків (юнітів), в яких англійською мовою розглядаються проблеми, пов'язані з сучасною автомобілізацією. Кожен урок (юніт) має базовий текст та термінологічний словник до нього, а також додаткові тексти і різноманітні вправи, що розвивають навички мовлення та вміння. Додатково даються тексти для самостійного аналізу. В окремому розділі містяться короткий довідник з деяких розділів граматики і вправи на закріплення матеріалу.

## UNIT 1

### I. Vocabulary.

goods	товары	товари
pipeline	трубопровод	трубопровід
installation	установка	встановлення
warehouse	склад	склад, будова
trucking terminal	грузовой терминал	вантажний термінал
legality	законность (pl.обязанности)	законність (обов'язки)
freight	грузовой	вантажний
containerization	организация контейнерных перевозок	організація контейнерних перевезень
bulk	объёмный, крупный	об'ємний, великий
subsidize	субсидировать	субсидувати
traffic flow	транспортный поток	транспортний потік
restrain	сдерживать, ограничивать	стримувати, обмежувати
urban sprawl	стихийный рост городов за счёт сельской местности	стихійне зростання міст за рахунок сільської місцевості
mode	способ	спосіб

### II. Read and translate the text.

#### TRANSPORT

Transport or transportation is the movement of people and goods from one location to another. Modes of transport include air, rail, road, water, cable, pipeline, and space. The field can be divided into infrastructure, vehicles, and operations.

Transport infrastructure consists of the fixed installations necessary for transport, and may be roads, railways, airways, waterways, canals and pipelines, and terminals such as airports, railway stations, bus stations, warehouses, trucking terminals, refueling depots (including fueling docks and fuel stations), and

seaports. Terminals may be used both for interchange of passengers and cargo and for maintenance.

Vehicles travelling on these networks may include automobiles, bicycles, buses, trains, trucks, people, helicopters, and aircraft. Operations deal with the way the vehicles are operated, and the procedures set for this purpose including financing, legalities and policies. In the transport industry, operations and legalities of infrastructure can be either public or private, depending on the country and mode.

Passenger transport may be public, where operators provide scheduled services, or private. Freight transport has become focused on containerization, although bulk transport is used for large volumes of durable items. Transport plays an important part in economic growth and globalization, but most types cause air pollution and use large amounts of land. While it is heavily subsidized by governments, good planning of transport is essential to make traffic flow, and restrain urban sprawl.

#### Mode of transport

A mode of transport is a solution that makes use of a particular type of vehicle, infrastructure and operation. The transport of a person or of cargo may involve one mode or several modes, with the latter case being called intermodal or multimodal transport. Each mode has its advantages and disadvantages, and will be chosen for a trip on the basis of cost, capability, route, and speed.

### III. Make up question

Here are the answers. What are the questions?

1. \_\_\_\_\_

They include air, rail, road, water, cable, pipeline, and space.

2. \_\_\_\_\_

They are used both for interchange of passengers and cargo and for maintenance.

3. \_\_\_\_\_

Yes, they can be either public or private, depending on the country and mode.

4 \_\_\_\_\_

It is used for large volumes of durable items.

5 \_\_\_\_\_

Yes, it plays an important part in economic growth and globalization

IV. Put missing words and expressions into each gap

1. Each mode has its \_\_\_\_\_.

2. Transportation is the movement of \_\_\_\_\_ from one location to another.

3. Transport infrastructure consists of \_\_\_\_\_ necessary for transport.

4. Vehicles travelling on these networks may include \_\_\_\_\_.

5. \_\_\_\_\_ has become focused on containerization.

V. Make up sentences with the following words and expressions

Modes of transport, trucking terminals, interchange of passengers, legalities, freight, urban sprawl.

VI. Express the main idea of the text.

## UNIT 2

I. Vocabulary.

to anchor	скрепляют, закрепляют	скріплювати, закріплювати
tie	шпала	шпала
timber	бревно, балка	деревина, балка
concrete	бетон	бетон
gauge	размер	розмір
maglev	магнитная подвеска	магнітна почіпка
propulsion	приведение в движение	надання руху

to haul	тянуть, тащить	тягнути, волочитися
trackside system	зд. линия электропередачи	лінія електропересилання
friction	трение	тертя
tire	шина	шина
commuter train	пригородный поезд	приміський потяг
dedicated train	вагон спецпредназначения	вагон спецпризначення
to smooth	выравнивать	вирівнювати
dual	двойной	подвійний
easement	полоса отвода, полоса отчуждения	смуга відведення, смуга відчуження
flexibility	гибкость, подвижность	гнучкість, рухливість
to deem	полагать, считать	вважати

## II. Read and translate the text.

### RAIL TRANSPORT

Rail transport is where a train runs along a set of two parallel steel rails, known as a railway or railroad. The rails are anchored perpendicular to ties (or sleepers) of timber, concrete or steel, to maintain a consistent distance apart, or gauge. The rails and perpendicular beams are placed on a foundation made of concrete or compressed earth and gravel in a bed of ballast. Alternative methods include monorail and maglev.

A train consists of one or more connected vehicles that run on the rails. Propulsion is commonly provided by a locomotive, that hauls a series of unpowered cars, that can carry passengers or freight. The locomotive can be powered by steam, diesel or by electricity supplied by trackside systems. Alternatively, some or all the cars can be powered, known as a multiple unit. Also, a train can be powered by horses, cables, gravity, pneumatics and gas turbines. Railed vehicles move with much less friction than rubber tires on paved roads, making trains more energy efficient, though not as efficient as ships.

Intercity trains are long-haul services connecting cities; modern high-speed rail is capable of speeds up to 350 km/h (220 mph), but this requires specially

built track. Regional and commuter trains feed cities from suburbs and surrounding areas, while intra-urban transport is performed by high-capacity tramways and rapid transits, often making up the backbone of a city's public transport. Freight trains traditionally used box cars, requiring manual loading and unloading of the cargo. Since the 1960s, container trains have become the dominant solution for general freight, while large quantities of bulk are transported by dedicated trains.

### Road

A road is an identifiable route, way or path between two or more places. Roads are typically smoothed, paved, or otherwise prepared to allow easy travel; though they need not be, and historically many roads were simply recognizable routes without any formal construction or maintenance. In urban areas, roads may pass through a city or village and be named as streets, serving a dual function as urban space easement and route.

The most common road vehicle is the automobile; a wheeled passenger vehicle that carries its own motor. Other users of roads include buses, trucks, motorcycles, bicycles and pedestrians. As of 2002, there were 590 million automobiles worldwide.

Automobiles offer high flexibility and with low capacity, but are deemed with high energy and area use, and the main source of noise and air pollution in cities; buses allow for more efficient travel at the cost of reduced flexibility. Road transport by truck is often the initial and final stage of freight transport.

### III. Comprehension check

Are the following statements about the text true or false?

1. Road transport is where a train runs along a set of two parallel steel rails, known as a railway or railroad.
2. The rails are anchored parallel to ties.
3. Sleepers are made of timber, concrete or steel
4. A train consists of more than two connected vehicles that run on the rails
5. The locomotive can be powered by steam, diesel or by electricity
6. Railed vehicles move with more friction than rubber tires on paved roads

7. Intra-urban transport is performed by high-capacity regional and commuter trains.

8. In urban areas, roads may not pass through a city or village.

IV. Make up the plan of the text

V. Answer the questions

1. What is the definition of a railroad?
2. What does a train consist of?
3. What is propulsion commonly provided by?
4. What are the main sources of power for a locomotive?
5. What is making up the backbone of a city's public transport?

VI. Express the main idea of the text.

### UNIT 3

I. Vocabulary.

craft	судно	судно
to staff	обеспечивать персоналом	забезпечувати обслугою
scheduled services	работающий по расписанию	який працює за розкладом
ad hoc	на данный случай	на даний випадок
impact	влияние	вплив
commuting	ездить ежедневно на работу из пригорода и обратно	їздити щоденно на роботу з передмістя та назад
short-haul	местный	місцевий
long-haul	дальнего следования	далекого прямування
coach	пассажирский вагон с сидячими местами	пасажирський вагон з сидячими місцями
intermodal	связанный с использованием различных видов транспорта в одной поездке	зв'язаний з використанням різних видів транспорту в одній

		подорожі
hub	вокзал, узловая станция	вокзал, вузлова станція

II. Read and translate the text.

## VEHICLES

A vehicle is any non-living device that is used to move people and goods. Unlike the infrastructure, the vehicle moves along with the cargo and riders. Vehicles that do not operate on land, are usually called crafts. Unless being pulled by a cable or muscle-power, the vehicle must provide its own propulsion; this is most commonly done through a steam engine, combustion engine, electric motor, a jet engine or a rocket, though other means of propulsion also exist. Vehicles also need a system of converting the energy into movement; this is most commonly done through wheels, propellers and pressure.

Vehicles are most commonly staffed by a driver. However, some systems, such as people movers and some rapid transits, are fully automated. For passenger transport, the vehicle must have a compartment for the passengers. Simple vehicles, such as automobiles, bicycles or simple aircraft, may have one of the passengers as a driver.

### Travel and Public transit

Passenger transport, or travel, is divided into public and private transport. Public is scheduled services on fixed routes, while private is vehicles that provide ad hoc services at the riders desire. The latter offers better flexibility, but has lower capacity, and a higher environmental impact. Travel may be as part of daily commuting, for business, leisure or migration.

Short-haul transport is dominated by the automobile and mass transit. The latter consists of buses in rural and small cities, supplemented with commuter rail, trams and rapid transit in larger cities. Long-haul transport involves the use of the automobile, trains, coaches and aircraft, the last of which have become predominantly used for the longest, including intercontinental, travel. Intermodal passenger transport is where a journey is performed through the use of several modes of transport; since all human transport normally starts and ends with walking, all passenger transport can be considered intermodal. Public transport



may also involve the intermediate change of vehicle, within or across modes, at a transport hub, such as a bus or railway station.

Taxis and Buses can be found on both ends of Public Transport spectrum, whereas Buses remain the cheaper mode of transport but are not necessarily flexible, and Taxis being very flexible but more expensive. In the middle is Demand responsive transport offering flexibility whilst remaining affordable.

International travel may be restricted for some individuals due to legislation and visa requirements.

III. Give the antonyms for the following words

Expensive, several, start, long-haul, rural, private, rapid.

IV. Give the definitions of the following notions

1. Vehicle
2. Craft
3. Private transport
4. Mass transit
5. Long-haul transport
6. Intermodal passenger transport

V. Put missing words and expressions into each gap

1. A vehicle is used to move \_\_\_\_\_.
2. Unless being \_\_\_\_\_ a cable or muscle-power, the vehicle must provide its own \_\_\_\_\_.
3. Vehicles also need a system of \_\_\_\_\_ into movement.
4. Vehicles are most commonly \_\_\_\_\_ by a driver.
5. Private transport is vehicles that provide \_\_\_\_\_ services at the riders desire
6. Travel may be as part of daily \_\_\_\_\_, for business, leisure or migration.
7. Since all human transport normally starts and ends with walking, it can be considered \_\_\_\_\_.
8. Taxis are very \_\_\_\_\_ but more expensive.

## VI. Express the main idea of the text

### UNIT 4

#### I. Vocabulary.

to offset	сместать	зміщати
pathway	путь	шлях
to vary	меняться	змінюватись
impact	воздействие	вплив
congestion	затор	затор
habitat	естественная среда	природне середовище
unleaded	не этилированный	не етилований
input	вход, вклад (зд. вложение)	внесок
occupancy	занятие (территории, места и т.д.)	захоплення

#### II. Read and translate the text.

### TRANSPORT AND THE ENVIRONMENT

Transport is a major use of energy, and burns most of the world's petroleum. This creates air pollution, including nitrous oxides and particulates, and is a significant contributor to global warming through emission of carbon dioxide, for which transport is the fastest-growing emission sector. By subsector, road transport is the largest contributor to global warming. Environmental regulations in developed countries have reduced the individual vehicles emission; however, this has been offset by an increase in the number of vehicles, and more use of each vehicle. Some pathways to reduce the carbon emissions of road vehicles considerably have been studied. Energy use and emissions vary largely between modes, causing environmentalists to call for a transition from air and road to rail and human-powered transport, and increase transport electrification and energy efficiency.

Other environmental impacts of transport systems include traffic congestion and automobile-oriented urban sprawl, which can consume natural

habitat and agricultural lands. By reducing transportation emissions globally, it is predicted that there will be significant positive effects on Earth's air quality, acid rain, smog and climate change.

#### Automobiles

The fuel efficiency in transportation ranges from a few megajoules per kilometre for a bicycle to several hundred for a helicopter.

Efficiency can be expressed in terms of consumption per unit distance per vehicle, consumption per unit distance per passenger or consumption per unit distance per unit mass of cargo transported.

Automobile fuel efficiency is often expressed in volume fuel consumed per one hundred kilometres (i.e., L/100 km) but in distance per volume fuel consumed (i.e., miles per gallon) in the US. This is complicated by the different energy content of fuels (compare petrol and diesel). The Oak Ridge National Laboratory (ORNL) state that the energy content of unleaded gasoline is 115,000 BTU per US gallon (32 MJ/L) compared to 130,500 BTU per US gallon (36.4 MJ/L) for diesel.

A second important consideration is the energy costs of producing these fuels. Bio-fuels, electricity and hydrogen, for instance, have significant energy inputs in their production. Because of this, the 50-70% efficiency of hydrogen production has to be combined with the vehicle efficiency to yield net efficiency.

A third consideration to take into account is the occupancy rate of the vehicle. As the number of passengers per vehicle increases the consumption per unit distance per vehicle increases. However this increase is slight compared to the reduction in consumption per unit distance per passenger. We can compare, for instance, the estimated average occupancy rate of about 1.3 passengers per car in the San Francisco Bay Area to the 2006 UK estimated average of 1.58.

### III. Comprehension check

Are the following statements about the text true or false?

1. Road transport is hardly the main contributor to global warming.
2. Environmentalists call for reducing all kinds of transport.
3. There will be significant positive effects on Earth's air quality by reducing transportation emissions
4. Bio-fuels, electricity and hydrogen have insignificant energy inputs in their production.
5. While increasing the number of passengers per vehicle the consumption per unit distance per vehicle increases.

### IV. Make up questions

Here are the answers. What are the questions?

1 \_\_\_\_\_

Yes, it creates air pollution and is a significant contributor to global warming.

2 \_\_\_\_\_

It's the road transport.

3 \_\_\_\_\_

It's energy use and emissions.

4 \_\_\_\_\_

It can be done only by reducing transportation emissions globally.

5 \_\_\_\_\_

From a few megajoules per kilometre for a bicycle to several hundred for a helicopter.

6 \_\_\_\_\_

It's efficiency.

7 \_\_\_\_\_

115,000 BTU per US gallon.

8 \_\_\_\_\_

Yes, it has significant energy inputs.

V. Make up sentences with the following words and expressions

Contributor, to reduce, transition, traffic congestion, fuel efficiency, energy content, unleaded gasoline, energy inputs.

VI. Express the main idea of the text.

## UNIT 5

1. Other than – кроме – зокрема
2. Double-decker buses – двухэтажные автобусы – двоповерхові автобуси
3. Racy – скоростной – швидкісний
4. Diamond tiaras – бриллиантовые диадемы (тиары) – діамантові діадеми (тіари)
5. Room (зд.) – пространство – простір
6. Wheelchair – инвалидная коляска – інвалідний візок
7. to buff – существовать, иметь место – існувати
8. to fret – беспокоить, мить – турбувати
9. Upholstery – обивка, обивочный материал – оббивка

### BYE, BYE, “BLACK BOX”

Other than those bright red double-decker buses, there is nothing more familiar on the streets of London than the British taxicab. These square “black boxes” have moved passengers for nearly four decades and seem almost as permanent a fixture as Big Ben. Alas, their days may be numbered. If all goes according to plan, Londoners will see a new taxicab in less than two years.

The new taxi, called CR6, will seem positively racy next to the older model. It will still have a high roof (originally designed so gentlemen would not have to remove their top hats, nor ladies their diamond tiaras). But some of the gentility will be missing. The new cab will look more like a station wagon, with modern contour lines and room to carry a passenger in a wheelchair. The CR6 is not the result of any great public outcry but rather an attempt to comply with European Council rules so the cab’s manufacturer, Manganese Bronze Ltd., can sell taxis in Europe.

Traditionalists already hate the new taxi. The old cab has had small modifications made to it over the years so that it is now an almost perfect taxi, says Ivor Stanbrook, a member of Parliament – a Conservative, of course. Not so, say the drivers. They contend the old cabs are noisy. “A lot of our work is driving tourists all over London”, says Harry Feigin of the Licensed Taxi Drivers’ Association. “It’s pretty hard to be a guide when you can’t hear the questions properly – and the passengers can’t hear the answers”.

The CR6 appeared in 2000, but it will take 10 years for the changeover. Nostalgia buffs, however, need not fret. The old cabs will be refitted with new engines, luxurious upholstery, telephones radios and color TV and sold in the USA. Where else?

I. Answer the following questions.

1. How long have passengers “black boxes” moved?
2. How is the new taxi called?
3. How will this taxi look?
4. Do traditionalists greet CR6?
5. When did the new taxi appear?
6. What period of time will it take for the changeover?

II. Find statements contradicting the content of the text.

1. The new taxi is too noisy.
2. Traditionalists don’t like the new cab.
3. In two years Londoners will not be able to see old cabs.
4. New taxis will be sold in the USA and old – in Europe.

III. Read and translate the dialogues into your native language.

Dialogue 1

A. I’d like a taxi to take me to Ealing

B. What’s your address?

A. Long Rood

B. Where do you want to go?

A. 25, Green Street, Ealing

- B. What's your name?  
A. Peter Brown  
B. What is your telephone number?  
A. 565 – 4892  
B. The taxi will be with you in 10 minutes

#### Dialogue 2

- A. Taxi!  
B. Where to, six?  
A. 25, Green Street, Ealing and put my luggage into the taxi  
B. Here we are, six.  
A. How much do I owe you?  
B. Ten pounds  
A. Here you are. Thank you

## UNIT 6

### FORD UNVEILS CAR OF THE FUTURE

The Ford Eltec, described by the company as "the family car of the future", will make its debut at the Frankfurt motor show.

Extensive electronic systems have taken over many of the driver's duties.

A mini-computer continuously fine-tunes the engine, and selects the right ratio in the variable gearbox.

The driver still has the traditional accelerator pedal, but it is not connected mechanically to the engine. Instead, it feeds signals to the computer which then decides the most efficient combination of throttle and transmission -ratio.

The futurist body shell, with large areas of flush-fitting glass, is powered to a small 1.3-litre light alloy engine, with three-valves per cylinder. It runs on lead free petrol, and competes with Ford's "lean burn" approach to cleaner exhaust gases.

The car's under-body retracts automatically at speed to improve its aerodynamic efficiency and further reduce petrol consumption.

The computer also controls the setting of a variable air suspension system reacting to loads and speed, prevents wheel spin and monitors an anti-lock braking system.

The sunroof has five glass louvers and automatically closes when the ignition key is removed. A humidity sensor closes it at the first sign of rain.

The dashboard display is mounted on, and moves with the steering column so that the wheel does not mask the dials.

The Ford Eltec, short for electronic technology, is a prototype research vehicle which is unlikely to go into production .in its present form.

However, many of the electronic systems, its new leanburn engine and the unusual body features will almost certainly appear in Ford cars within the next five years.

## II. Answer the following questions.

1. Read the title of the text and express on its bases your guess about the text content .
2. Tell why Ford Eltec may be called the Car of Future.
  1. Where will make its debut the Ford Eltec?
  2. What can you say about traditional accelerator pedal?
  3. What do you know about Ford Eltec's engine?
  4. What device controls the setting of a variable air suspension?
  5. When does humidity sensor close?
  6. Will the Ford Eltec go into production in its present form?

## III. Continue the following sentences.

1. A mini-computer continuously ...
2. The car's under-body ...
3. The sunroof ...
4. The dashboard display ...
5. ..., its new lean burn engine ...



## UNIT 7

### A Granada to beat the thieves

1. to preview – предвидеть – передбачати
2. anti-lock braking – система антиблокирования при торможении – система анти блокування при гальмуванні
3. thief proof – недоступные для воров – недосяжні для крадіїв
4. to gamble (зд) – рисковать – ризикувати
5. boot – багажник – багажник
6. versatile – универсальный, многосторонний – універсальний, різнобічний
7. controversial – противоречивый – суперечливий
8. jelly mould – мягкая, без острых углов форма – м'яка, без гострих кутів форма
9. rival – конкурент, соперник – суперник
10. joint venture – совместное предприятие – сумісне підприємство
11. four-wheel drive – полноприводной автомобиль, привод на 4 колеса – повно приводний, привід на 4 колеса

## INTELLIGENT WHEELS

Sophisticated electronics is playing a big role in current automotive research. One of the latest applications is the “intelligent” wheel-computerized systems that continually monitor the air pressure of automobile tires and alert drivers if their tires are over- or underinflated. Neotech Industries of Dallas is developing a digital electronic monitoring system. Another firm, Techni Guidance Inc. of Santa Clara, Calif., has devised a product that not only monitors air pressure in tires but adjusts it automatically. The system called entireControl, also enables a driver to set tire pressure while seated. Techni Guidance claims entireControl, which is still being tested, will enhance the safety and fuel efficiency of a car.

EntireControl consists of three separate modules. The first is the dashboard display, which houses the system's main microprocessor, programming buttons and warning signals. It contains a tire-pressure display,

which provides psi (pounds per square inch) readings for the front and back tires (in pairs); tire-positions indicators that light up when a tire is losing pressure; selectors that establish optimum tire pressure for city and highway driving; and buttons for setting specific tire pressure (within pre-programmed limits).

The second component is the detector/drive module – which is essentially four microchips attached, in one unit, to the chassis.

II. Передайте содержание текста в виде аннотации.

III. Ответьте на вопросы: как и для чего используются различные электронные приспособления в конструкции описываемого автомобиля?

IV. Перескажите содержание текста на английском языке, максимально упрощая грамматические обороты и обобщая техническую терминологию.

V. Поставьте к каждой смысловой единице текста (абзацу, отрывку) вопрос, с помощью которого можно было бы судить о содержании данного абзаца.

VI. Продолжите предложения:

1. One of the latest applications ...
2. Another firm has devised ...
3. The system also enables ...
4. Entire control consists of ...
5. It contains ...
6. The second component is ...

## UNIT 8

1. taking off – взлет – взліт
2. multi-purpose – многоцелевые истребители – багатоцільові винищувачі
3. to cope – справляться, преодолевать – переборювати
4. power steering – гидроусилитель руля – гідро підсилювач керма
5. built-in tendency – заложенная в проект способность –
6. to understeer – подруливание – додаткове керування
7. back-wheel drift – занос задних колес занесення задніх коліс

8. fascia – приборная доска, торпеда приладова дошка, торпеда
9. central locking – центральний блокувальний механізм центральний блокувальний механізм
10. demisting – предохранение от запотевания стекол запобігання проти запотівання скла
11. in reverse – движение задним ходом прямування заднім ходом

### HIGH – FIXER HITS THE ROAD

If you have ever wondered why SAAB have an aircraft taking off as its products slide out along the highway, the reason is that the company started as an aircraft maker, and still makes advanced multi-purpose fighters.

The first SAAB sold in Britain 150 years ago was the 96 model powered by a three-cylinder, two-stroke engine with a 841 cc capacity.

Since those days the unique aerodynamic SAAB shape – developed from its experience of building aircraft – has become a familiar sight on British roads. I am a little sad to see those distinctive lines are no longer retained in the new SAAB 900.

The cars are built to last and one does not see many secondhand models available, partly because people hold on to them and partly because total monthly sales in Britain average around 600 cars.

I recently drove the 900 three-door coupe, powered by a 2 litre single carburetor engine, and found it singularly impressive on many counts.

This quality car is built to give you the utmost confidence. Whatever conditions you may encounter, you feel the vehicle will cope.

Power steering makes light work for the drive and the car has a built-in tendency to understeer. This gives amazing stability, reducing the risk of back-wheel drift on cornering.

The understeer is also helped by the way the weight is distributed, with 60 per cent of the vehicle's weight (with only a driver) on the front wheels.

Daylight driving lights are a feature, of course, and what is more, the driver's seat cushion has thermostatically controlled heating elements, which are automatically switched on when the ignition is engaged.

Gear change is silky smooth on this five-speed model with the longitudinally mounted, in-line engine driving the front wheels. An engine,

incidentally that owes something to the 1.7 litre unit used in the British Triumph Dolomite, from which the Swedes developed it.

The arrangement of the facia superb, with its aircraft-style instruments functionally grouped. Beautifully upholstered, the interior is quite spacious.

One of the great advantages of this vehicle with all the 900 range and earlier models is the thief-proof device which locks the car in reverse.

It has central locking (including the boot), and extremely effective ventilation and demisting, which all make it a delight to drive.

Perhaps, the clutch and brake pedals are a little too near for comfort and could pose problems for the big footed driver. The SAAB 900 range has three, four and five-door versions, and range in prices from £7,745 to £8,805... a good long-term investment if you have that kind of money.

II. Look through the text and tell if these statements are correct.

1. The first SAAB was sold in Britain 50 years ago.
2. Gear change is not silky smooth on this five-speed model.
3. The SAAB 900 has only five doors version.

III. Answer the following questions.

1. When was sold the first SAAB in Britain?
2. What are total monthly SAAB sales in Britain?

Just a moment. Yes, both clutch and brakes need repairing.

How long will the repairs take?

I think no more then I hour.

Well.

3. What gives the SAAB amazing stability?
4. What device is driver's seat cushion fitted with?
5. What is one of the greatest advantages of this vehicle?
6. How many versions has the SAAB 900 range?

IV. Dialogue

B. I'd like to buy this new SAAB 900

M. Please. This model is new and very economical.

B. How much is it?

M. It is more expensive than previous one but it has a new type of engine, therefore fuel consumption is cut down.

B. Can I have a test drive to see how the car runs?

M. Yes, of course.

Dialogue

D. How many kilometers to the nearest repair station?

P. Take motorway M4 for about 20 Kilometers and then turn to the left at the filling station.

D. Thank you I'll be able to get there. Oh here we are.

M. Any troubles with your car?

D. I'd like you to adjust the clutch and check the brakes.

M. Just a moment. Yes, both clutch and brakes need repairing.

D. How long will the repairs take?

M. I think no more than 2 hours.

D. Well.

## UNIT 9

### I. Read and translate the text.

#### TRANSPORT, FATE AND THE EFFECTS OF SILVER IN THE ENVIRONMENT

Silver occurs naturally in the environment, but it is also used in various businesses and industries, particularly photofinishing. There has long been concern about the effects of silver on aquatic organisms. Over the past decade, significant advances have been made in the understanding of the environmental chemistry, toxicology, and biological behavior of silver. The most recent findings promise to revolutionize scientific thinking not only with regard to silver behavior, but for other metals in the environment as well. The scientific community has learned much new information about sources, concentration levels in natural waters and biota, physical and chemical forms, adsorption and desorption reactions, toxicology, bioaccumulation, influence of ligands, and transport and fate characteristics of silver. The research findings have been made public through individually published peer-reviewed papers and the proceedings of the international Argentum conferences.

UW Sea Grant Institute sponsored six international conferences on the "Transport, Fate and Effects of Silver in the Environment". From 1993-1998, the conferences were held in Madison, Wisconsin; Washington, D.C.; and Hamilton, Ontario, Canada.

### II. Vocabulary.

fate	судьба	доля
photofinishing	фотофиниш	фотофініш
aquatic	водный	водний
biota	биота, флора и фауна определённого района	біота, флора та фауна визначеного району
desorbption	десорбция	десорбція
ligand	лиганд	ліганд
peer-reviewed	материалы, прошедшие экспертную	матеріалі, які про-

papers	оценку	йшли експертну оцінку
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### III. Make up questions.

Here are the answers. What are the questions?

1. \_\_\_\_\_

UW Sea Grant Institute sponsored six international conferences.

2. \_\_\_\_\_

The scientific community has learned much new information about sources, concentration levels in natural waters and biota.

3. \_\_\_\_\_

Over the past decade, significant advances have been made in the understanding of the environmental chemistry, toxicology, and biological behavior of silver.

4. \_\_\_\_\_

Silver occurs naturally in the environment, but it is also used in various businesses and industries, particularly photofinishing.

### IV. Put missing words and expressions into each gap.

1. The research findings have been made public through individually published \_\_\_\_\_.

2. There has long been concern about the effects of silver on \_\_\_\_\_.

3. The most recent findings promise to revolutionize \_\_\_\_\_ not only with regard to silver behavior.

4. Significant advances have been made in the understanding of the environmental \_\_\_\_\_.

5. Silver is also used in various businesses and industries, particularly \_\_\_\_\_.

### V. Express the main idea of the text.

## UNIT 10

### I. Read and translate the text.

#### BACK TO THE FUTURE AS 2050 ROADMAP PUBLISHED

Europe's road transport in 2050 will involve lower speed limits and very few internal combustion engines. That is the vision that emerges from a Commission consultation on how to reduce greenhouse gas emissions from Europe's transport sector.

The report, which ends a 15-month consultation with around 100 interested parties from industry and the environmental movement, says that a mixture of technical and non – technical options could reduce emissions from transport by 89% between 1990 and 2050, whereas a 74% rise is foreseen under “business as usual”.

The conclusions suggest that technical measures alone – including doubling the greenhouse gas (GHG) efficiency of biofuels and replacing nearly all internal combustion engines with electric cars or cars with some form of fuel cell – will achieve a 36% reduction. Such a cut requires all the electricity needed to power the vehicles coming from renewable sources. It shows that part of the GHG reductions from technical improvements is undermined by rebound effects and that non-technical measures are needed to ensure that promised GHG cuts are achieved in practice.

Among the non-technical measures recommended are lowering speed limits, and reorganizing taxes and charges so that forms of transport that emit large amounts of greenhouse gases lose all subsidies.

T&E director Joss Dings said, “This report again demonstrates the importance of strong technical measures. But it truly adds value by being sober about what technical measures can achieve by themselves – which is not as much as we need. It demonstrates that deep greenhouse gas cuts can only be achieved if we address the fundamental drivers of transport emissions. That means getting rid of subsidies, starting with aviation and company cars”.



## II. Vocabulary.

roadmap	дорожная карта	дорожня карта
speed limit	предельная скорость	гранична швидкість
internal combustion engine	двигатель внутреннего сгорания	двигун внутрішнього згоряння
to emerge	появляться	з`являтися
greenhouse gas	парниковый газ	парниковий газ
party	(зд.) партия	партія
doubling	удвоение, удваивание	подвоєння, подвоювання
fuel cell	топливный элемент	паливний елемент
renewable source	возобновляемый источник энергии	поновлюване джерело енергії
rebound effect	эффект, имеющий обратное действие	ефект, який має зворотну дію
sober	здравомыслящий, рассудительный	розумний, розсудливий

## III. Make up questions.

Here are the answers. What are the questions?

1. \_\_\_\_\_

The report says that a mixture of technical and non – technical options could reduce emissions from transport by 89% between 1990 and 2050.

2. \_\_\_\_\_

Europe's road transport in 2050 will involve lower speed limits and very few internal combustion engines.

3. \_\_\_\_\_

Joss Dings said, "This report again demonstrates the importance of strong technical measures".

4. \_\_\_\_\_

Among the non-technical measures recommended are lowering speed limits, and reorganizing taxes and charges.

5. \_\_\_\_\_

The conclusions suggest that technical measures alone – including doubling the greenhouse gas (GHG) efficiency of biofuels and replacing nearly all internal combustion engines will achieve a 36% reduction.

IV. Put missing words and expressions into each gap.

1. Such a cut requires all the electricity needed to power the vehicles coming from \_\_\_\_\_.

2. The report, which ends a 15-month consultation with around 100 interested \_\_\_\_\_ from industry and the environmental movement, says that a mixture of technical and non – technical options could reduce \_\_\_\_\_ from transport by 89% between 1990 and 2050.

3. Technical measures alone – including \_\_\_\_\_ the greenhouse gas (GHG) efficiency of biofuels and replacing nearly all internal combustion engines with electric cars or cars with some form of \_\_\_\_\_ – will achieve a 36% reduction.

4. Europe’s road transport in 2050 will involve lower \_\_\_\_\_ and very few \_\_\_\_\_.

5. That is the vision that \_\_\_\_\_ from a Commission consultation on how to reduce \_\_\_\_\_ emissions from Europe’s transport sector.

V. Express the main idea of the text.

## UNIT 11

I. Read and translate the text.

### TECHNICAL PROGRESS AND CLIMATIC CHANGE

One hundred years ago icebergs were a major climatic threat impeding travel between North America and Europe. 1,513 lives ended when the British liner Titanic collided with one on 14 April 1912. 50 years later jets overflow liners. Anticipating the solution to the iceberg danger required understanding not only the rates and paths on which icebergs travel but the ways humans travel, too.

My premise is that nearly everyone in the global warming debate, from atmospheric scientists and agronomists to energy engineers and politicians,

largely neglects to consider, and thus underestimates, the importance of technical change in considering reduction in greenhouse gases and adaptation to climate change.

Of course, not all technical change is good, with respect to climate or any other facet of our world. Technology can destroy as well as better us. Advances in technology such as the internal combustion engine have generated the outpouring of greenhouse gases in the first place. When Alfred J. Lotka made his landmark projection of anthropogenic climatic change in 1924, he figured 500 years to double atmospheric carbon. He did not foresee the explosion of energy demand and the gadgets that collectively would make the mushroom possible.

Not all human societies need have asked our question about technical progress in the face of climatic change. For some societies, time stands still or cycles with little development. Of course, the function of innovation has existed in all civilizations.

## II. Vocabulary.

to impede	препятствовать, затруднять	перешкоджати, утрудняти
to anticipate	предчувствовать, предвкушать	передчувати, тішитися
premise	предпосылка, вышесказанное	передумова, вищесказане
to neglect	пренебрегать, не обращать внимание	зневажати, не звертати увагу
facet	аспект, грань	аспект, межа
outpouring	переливающийся	який переливається
landmark	ориентир, веха	орієнтир, віха

## III. Make up questions.

Here are the answers. What are the questions?

1. \_\_\_\_\_?

Alfred J. Lotka made his landmark projection of anthropogenic climatic change in 1924.

2. \_\_\_\_\_?

1,513 lives ended when the British liner Titanic collided with one on 14 April 1912.

3. \_\_\_\_\_?

One hundred years ago icebergs were a major climatic threat impeding travel between North America and Europe.

4. \_\_\_\_\_?

Lotka did not foresee the explosion of energy demand and the gadgets.

5. \_\_\_\_\_?

Advances in technology such as the internal combustion engine have generated the outpouring of greenhouse gases in the first place.

IV. Put missing words and expressions into each gap.

1. When Alfred J. Lotka made his \_\_\_\_\_ of anthropogenic climatic change in 1924, he figured 500 years to double atmospheric carbon.

2. Not all technical change is good, with respect to climate or any other \_\_\_\_\_ of our world.

3. Advances in technology such as the internal combustion engine have generated the \_\_\_\_\_ in the first place.

4. One hundred years ago icebergs were a major climatic threat \_\_\_\_\_ travel between North America and Europe.

5. 1,513 lives ended when the British liner Titanic \_\_\_\_\_ with one on 14 April 1912.

V. Express the main idea of the text.

## UNIT 12

I. Read and translate the text.

### 21ST CENTURY

The Mars Exploration Rovers have provided huge amounts of information by functioning well beyond NASA's original lifespan estimates.

In the 21st century, technology is being developed even more rapidly, especially in electronics and biotechnology. Broadband Internet access became commonplace in developed countries, as did connecting home computers with music libraries and mobile phones.

Research is ongoing into quantum computers, nanotechnology, bioengineering, nuclear fusion, advanced materials (e.g. enhanced armor), the scramjet (along with railguns and high-energy beams for military uses), superconductivity, the memristor, and green technologies such as alternative fuels (e.g., fuel cells, plugin hybrid cars) and more efficient LEDs and solar cells.

The understanding of particle physics is also expected to expand through particle accelerator projects, such as the Large Hadron Collider – the largest science project in the world and neutrino detectors such as the ANTARES. Theoretical physics currently investigates quantum gravity proposals such as M-theory, superstring theory, and loop quantum gravity.

Spacecraft designs are also being developed, i.e. under the Project Constellation (see Orion and Ares V). The James Webb Space Telescope will try to identify early galaxies as well as the exact location of the Solar System within our galaxy, using the infrared spectrum. The finished International Space Station will provide an intermediate platform for space missions and zero gravity experiments. Despite challenges and criticism, NASA and ESA plan a manned mission to Mars in the 2030s.

## II. Vocabulary.

exploration	исследование, изучение	дослідження, вивчення
lifespan	продолжительность жизни	тривалість життя
broadband	широкополосный	широкополосний
commonplace	избитый, банальный	заяложений, банальний
ongoing	постоянный, непрерывный	постійний, безперервний
nuclear fusion	ядерный синтез, слияние ядер	ядерний синтез
scramjet	сверхзвуковой самолёт	надзвуковий літак
railgun	рельсотрона	рельсотрона
superconductivity	сверхпроводимость	надпровідність
memristor	мемристор	мемристор
neutrino detectors	нейтринные детекторы	нейтринні детектори

superstring theory	теория суперструн	теорія суперструн
loop quantum gravity	петлевая квантовая гравитация	петльова квантова гравітація
infrared spectrum	инфракрасный спектр	інфрачервоний спектр
intermediate platform	промежуточная платформа	проміжна платформа
zero gravity experiments	эксперименты нулевой гравитации	експерименти нульової гравітації

### III. Make up questions.

Here are the answers. What are the questions?

1. \_\_\_\_\_?

Theoretical physics currently investigates quantum gravity proposals such as M-theory, superstring theory, and loop quantum gravity.

2. \_\_\_\_\_?

Despite challenges and criticism, NASA and ESA plan a manned mission to Mars in the 2030s.

3. \_\_\_\_\_?

The James Webb Space Telescope will try to identify early galaxies as well as the exact location of the Solar System within our galaxy.

4. \_\_\_\_\_?

The finished International Space Station will provide an intermediate platform for space missions and zero gravity experiments.

5. \_\_\_\_\_?

Research is ongoing into quantum computers, nanotechnology, bioengineering, nuclear fusion, advanced materials, the scramjet, superconductivity etc.

### IV. Put missing words and expressions into each gap.

1. Despite challenges and criticism, NASA and ESA plan a \_\_\_\_\_ to Mars in the 2030s.

2. \_\_\_\_\_ are also being developed, i.e. under the Project Constellation.

3. The understanding of particle physics is also expected to expand through \_\_\_\_\_, such as the Large Hadron Collider.

4. In the 21st century, technology is being developed even more rapidly, especially in \_\_\_\_\_.

5. The \_\_\_\_\_ have provided huge amounts of information by functioning well beyond NASA's original \_\_\_\_\_ estimates.

V. Express the main idea of the text.

VI. Vocabulary.

автомобиль	motor car
дорожное движение	traffic
поездка	journey
авторемонтная мастерская	service
автострада	motorway
аккумулятор	battery
акселератор	accelerator
антифриз	antifreeze
багажник	boot (trunk)
бампер	bumper
бензин	petrol
бензозаправочная станция	filling station
буксир	tow-line
ветровое стекло	windscreen
вода	water
водитель	driver
выхлопная труба	exhaust pipe
давление (в шинах)	tire pressure
двигатель	engine
дворник (стеклоочиститель)	windscreen wiper
домкрат	jack
дорога	road
дорожно-транспортное происшествие	motor accident

дорожный знак	traffic sign
заднее сидение	back seat
зажигание	ignition
кольцевая транспортная развязка	roundabout (traffic circle)
коробка передач	gearbox
корпус	body
левый поворот	left turn
поломка	breakdown
права (водительские)	driving licence
правила дорожного движения	traffic regulations
правый поворот	right turn
руль	steering wheel
светофор	traffic lights
свеча	spark plug
скорость	speed
спущенная шина	flat tire
стартер	starter
сцепление	clutch
техобслуживание	service
тормоз	brake
указатель уровня бензина	petrol gauge
фара	headlight
шоссе	highway
вести машину	drive a car
заправлять	fill up
запускать двигатель	start the engine
заряжать аккумулятор	charge the battery
накачивать шину	pump up a tire



## *Поездка на автомобиле*

### Слова и выражения

### Words and phrases

Я хотел (-а) бы взять напрокат машину (с водителем) I'd like to rent a car (with a chauffer)

Вот мое (-я)... Here is my...  
(международное) водительское удостоверение (international) drivers license  
регистрационная карта registration

Мне бы хотелось застраховать автомобиль и гражданскую ответственность I'd like to insure the car and obtain Third Party Liability insurance

Сколько это будет стоить? How much will it cost?

Скажите, пожалуйста, как мне доехать до ...? Excuse me, please, how can I get to...?

Покажите, пожалуйста, на карте дорогу на ... Show me, please, the road to ... on the map

За какое время я доеду до ...? How long will it take me to get to ...

Сколько миль до ...? How many miles to ...?

Как мне проехать на ... шоссе? How can I get to the ... highway?

Правильно ли я еду в ...? Is this the right road to ...?

Какой налог за проезд по этой (-му) дороге (мосту)? What is the toll on this road (bridge)?

Я не заметил (-а) этого знака	I didn't notice the sign
Я постараюсь в дальнейшем не нарушать правил	I'll never violate the regulations again
По этой дороге есть ...? мотель автостоянка	Is there any ... on this road? motels rest areas
Где ближайшая ...? автозаправочная станция станция техобслуживания	Where is the nearest ...? filling station technical service station
Где можно припарковать машину?	Where can I park the car?
Как мне связаться со станцией техобслуживания?	How can I get in touch with the service station?
Мне кажется, что-то не в порядке с карбюратором системой зажигания системой питания системой смазки системой охлаждения трансмиссией рулевым управлением тормозной системой ходовой частью, подвеской электрооборудованием	I think something is wrong with the... carburetor ignition system fuel supply system lubrication system cooling system transmission steering gear brakes chassis, suspension electrical equipment
Вы можете это отремонтировать?	Can you fix it?
Сколько времени займет ремонт?	How much time will the repair take?

С этой неисправностью можно ехать дальше? Can I go on driving with this fault?

Прошу вас ...

заправить машину

вымыть (отполировать) машину

добавить антифриз

сменить масло

I'll ask you to...

refuel my car

wash (polish) my car

add some antifreeze

change the oil

Наполните бак, пожалуйста

Fill the tank up, please

Мне нужно ... литров бензина

I need ... litres of petrol

Я хочу...

отрегулировать...

проверить...

починить...

восстановить...

заменить...

зарядить...

устранить...

закрепить...

прочистить...

долить...

накачать...

смазать...

I want to...

adjust...

check...

repair...

restore...

replace...

charge...

eliminate...

fix...

clean...

top up...

pump up...

oil

Сколько я вам должен (за услуги)?

What do I owe you?

### *Техническая эксплуатация*

Посмотрите, пожалуйста, двигатель, Please have a look at my engine, it...  
он...

глохнет

stalls

неустойчиво работает на холостом

runs irregularly when idling

ходу

плохо запускается

won't start easily

сильно детонирует

kicks back badly

Прошу вас...

I'll ask you to...

устранить утечку газов в  
коллекторе

eliminate the leakage of gases from  
the manifold

заменить поршневые кольца

replace the piston rings

отрегулировать холостые обороты  
двигателя

adjust the idling revs of the engine

Имеются ли у вас запчасти к моему  
двигателю?

Do you have any spare parts for my  
engine?

Я хотел бы...

I'd like to...

отремонтировать привод  
карбюратора

fix the carburetor drive mechanism

прочистить жиклеры

clean the jets

сменить воздушный фильтр

change the air filter

промыть карбюратор

wash the carburetor

Я хочу...

I want to...

отрегулировать момент зажигания

adjust the ignition timing

сменить свечи

replace the spark plugs

проверить уровень и плотность

check the level and density of the

электролита

electrolyte

Не могли бы вы...?

Would you, please...?

отремонтировать реле стартера  
зарядить аккумулятор

repair the starter relay  
charge the battery

В моем автомобиле...

In my car...

засорился бензопровод  
течет бензобак  
пробит радиатор

the fuel pipeline is dirty  
the fuel tank is leaking  
the radiator is cracked

Могу я вас попросить...?

May I ask you to...?

долить масла в двигатель  
сменить масло в двигателе  
проверить уровень масла  
устранить течь

add oil to the engine  
change the oil in the engine  
check the oil level  
stop the leakage

В машине...

In my car...

проскальзывает сцепление  
не включается передача  
сильно шумит трансмиссия

the clutch is slipping  
gear is jammed  
there is too much noise in the gears

Прошу вас...

I'll ask you to ...

отремонтировать коробку передач  
отрегулировать сцепление  
прокачать систему гидропривода

repair the gearbox  
adjust the clutch  
eliminate air from the hydraulic  
system

В автомобиле вышел из строя...  
амортизатор

The ... shock absorber is faulty in my  
car

передний правый  
задний левый

right-hand front  
left-hand rear

Ослабла ... рессора задняя правая задняя левая	The ... spring is too weak right-hand rear left-hand rear
Проверьте, пожалуйста, ... крепление кардана задний мост	Check ... please the fastening of the propeller shaft the rear axle
Посмотрите, пожалуйста, переднюю подвеску	Please, have a look at the front suspension
Переднее (заднее) колесо... спустило проколото сильно изношено	The front (rear) wheel... is flat has been punctured is worn out
Прошу вас ... колесо заменить снять (установить) накачать	I'll ask you to ... the wheel change remove (install) pump up
Ощущается вибрация при скорости ... миль/час	The steering wheel vibrates at a speed of ... mi/hr
Проверьте, пожалуйста, рулевой механизм	Will you check the steering gear, please
Я хотел бы отрегулировать развал и схождение колес	I'd like to have the wheel camber and toe-in adjusted
Могу ли я ...? отрегулировать передние (задние) тормоза	Can I have ...? the front (rear) brakes adjusted

заменить тормозные накладки	the brake pedal
Отрегулируйте, пожалуйста,... ход педали тормоза ручной тормоз	Would you please adjust ... the movement of the brake pedal the hand brake
В машине не включается... указатель поворота передний (задний) подфарник стоп-сигнал ближний (дальний) свет левая (правая) фара фонарь заднего хода	The ... fails to switch on in my car turn indicator front (rear) parking lamp brake light low-beam (high-beam) head light left (right) head light reverse lamp
Не могли бы вы ...? сменить лампочку (предохранитель) отремонтировать выключатель	Could you please ...? replace the bulb (fuse)  repair the switch
В машине не работает ... указатель уровня бензина спидометр тахометр указатель давления масла амперметр электровентилятор      отопителя кузова сигнал поворота на панели управления	The ... does not work in my car petrol (gas -AmE) level gauge speedometer tachometer oil pressure gauge ammeter heater motor  turn indicator
Не могли бы вы устранить неисправность?	Can you fix the fault?

### *Инструменты и принадлежности водителя*

накидной ключ	box-end wrench
двусторонний ключ	double-head wrench
разводной ключ	adjustable wrench
тарированный ключ	torque wrench
торцовый ключ	socket wrench
штифтовый ключ	peg spanner
ключ «звездочка»	ring wrench
ключ с трещоткой	ratchet wrench
перьевая отвертка	blade screwdriver
крестообразная отвертка	cruciform screwdriver
молоток	hammer
зубило	cold chisel
осадка	drift
кернер	center punch
плоскогубцы	flat-nose pliers
круглогубцы	round-nose pliers



пассатижи	combination pliers
кусачки или бокорезы	side-cutting pliers
кронциркуль	outside calliper
напильник	file
щуп	dip stick
насос	pump
шприц для смазки	oil syringe
монтировка	tyre level
домкрат	jack
буксирный трос	tow-rope
пусковая рукоятка	starting crank
канистра	gas can
шланг	hose
воронка	funnel
запчасть	spare part
запасная шина	spare tyre
манжета	cuff

ШПЛИНТ	cotter pin
крюк	hook
лебедка	winch
проволока	wire
чехол	cover
ИЗОЛЯЦИОННАЯ ЛЕНТА	insulation tape
тряпка	cloth
огнетушитель	fire extinguisher
аптечка	medicine chest

## LUXURY CARS

The India of the twenty-first century will see Isuzu, Honda, Toyota, Mazda, Nissan, Yamaha, Austin Rover, Citroen and of course Suzuki automobiles on the streets. India, with such a wide range of cars to choose from, such internationally famous names, will have indeed arrived.

It matters little that the country will have to pay a minimum cost of more than Rs 1500 crore in terms of royalty and license fees, apart from dividends on equity shares, to foreign collaborators. Apart from the initial payment, the major portion of this amount will have to be paid every year.

Such collaboration is not confined to automobile manufacturers, Automobile ancillary units have entered into 53 collaboration agreements, all with Japanese firms. Thus Japanese transnational which have invaded: the US market are now well entrenched in the Indian automobile industry.

Automobiles are not used only for civilian purposes. Heavy vehicles are essential for the defense services. Obviously, the defence forces will soon find themselves dependent on these transnational corporations for their needs.

In this context it is significant that the Japanese are insisting on putting off indigenization as far as possible. Let us not forget that Japan is a partner of the USA in its global military strategy in this region.

The need in India today is for more public transport and not private cars. It should be a matter of concern that instead of concentrating on small cars, the emphasis is on large cars, large cars mean greater congestion on the roads and higher consumption of petrol.

On the other hand, a high priced large car, despite low volume of demand, ensures higher profits. What is more, the demand can be sustained because the affluent market can afford repeat purchase. The initial demand for the low priced small car might be relatively high, but repeat purchases are low. This is the experience of the automobile market in advanced capitalist countries.

Of the seven collaboration agreements for private cars at least five are in the high price range, from Rs 1,20 lakh to Rs 1,93 lakh. The smaller and relatively cheaper varieties cost between Rs 45,000 to Rs 90,000. Can India afford this luxury?

### STYLISH AND IMPRESSIVE

The new Renault 5 is a stylish and impressive French attempt to grab a bigger share of the small car market which accounts for some 28 per cent of all new car sales. There are seven versions with three engines which range in size from I to 1.4 litre, with six power levels and three transmissions and five equipment levels.

An outstanding feature is the economy claimed. The Renault 5 TC which will sell for £3,845 returns an average fuel consumption of 46.8 mpg. top of the range in performance and price and luxury specification is the Renault 5 TSE with a 1397 cc engine which can be yours for £5,985- Average fuel consumption should return a very impressive 43.3 mpg.

## PREPARING FOR WINTER DRIVING

Now is the time to think about being prepared for winter driving conditions. To start off, check that your tyre pressures correspond to those required for your car, and if the treads are worn, it is better to be safe than sorry and lay out on new tyres.

Icy and slippery roads are difficult enough to handle with good tyres.

Check that your clutch and brake fluids are not too low and whether your battery needs topping up with distilled water.

Most important of all make sure you have anti-freeze in your cooling system - do not forget that you may have had to top up during the summer, and if you already had anti-freeze it would have been diluted.

Another check is to see your windscreen wiper blades are in good condition. On some cars there are two settings for the air filter and it is wise to see that it is on a winter setting.

Starting on a freezing morning is a problem. It can help if the night before you leave a rich mixture, by giving the accelerator pedal a kick down before switching off.

It is easy to flood by excessive use of the pedal when trying to start on a very cold morning.

If the engine does not fire, do not run down the battery. It is as well to have a look at the spark plugs and dry them before trying the ignition again.

Port-hole driving is definitely not recommended. It is decidedly dangerous. It is better to spend a bit of time to clear the windscreen and other windows before setting off.

If you rub the glass the night before with a potato cut in half, you will find it a godsend on a frosty morning. It is worth spending a couple of pounds to equip yourself with a rubber-edged wiper.

Adjust carefully to winter driving conditions - always allow yourself plenty of time so that you do not have to break sharply.

On motorways and arterial roads make sure to keep a safe distance from the car ahead.

A simple check is if you can say: "One thousand and one," before your vehicle passes a point passed by the car ahead of you.

## VISA FOR DRIVING

It must be all of four years since I have driven a Citroen Visa, so it was pleasant to renew the acquaintance recently with this popular Citroen range of five-door hatchbacks.

It is a six-model range, starting with the modest 954 cc petrol-driven Visa IDE, moving up to the 1124 cc petrol version, two diesel versions, a lively 1360 petrol-driven, and finally the top of the range 1580 Visa GTi.

I drove the diesel I7ED model and the GTi. Splendid vehicles to drive. They handle so well, with very sure steering.

High cross-winds can buffet you on the motorway in these small cars but you never feel you are going to lose control and fly off. The fully independent suspension gives a pretty smooth ride.

The four cylinder diesel 1769 cc XUD7 is developed from the 1905 XUD9 unit, which is built at the Citroen factory at Tremery in France.

Extra under-bonnet soundproofing, special inlet and exhaust system silencing all add up to exclude much of the taxi rattle one associates with the diesel engine.

It only needs a second or two for the coil to heat up and the engine fires even in the coldest of weathers.

The four-speed, front-wheel drive engine has plenty of zip for a diesel and takes 15.9 seconds from zero to get up to 62 mph.

Its greatest plus is, of course, the fuel economy. This diesel returns an amazing 65.7 miles to the gallon, at around 56 mph constant and over 51 mpg in town conditions.

The GTi is a fast mover, taking just 9.1 seconds from standstill to 62 mph. After the diesel, the sharp acceleration takes a bit of getting used to. Even this sleek little mover can cover nearly 48 mpg at 56 mph and over 32 mpg in town traffic.

The power is derived from the newly-developed, overhead cam shaft and fuel-injected unit that develops 105 HP at 6,250 rpm.

The close ratio five-speed gearbox ensures a smooth change-up to fast cruising on the motorway.

The GTi is equipped with electrically-controlled front door windows and is up-rated with cloth upholstery all round. The seat coverings, front and rear, can be unzipped for cleaning. (/

One serious shortcoming I found was that I could not engage reverse if the front passenger seat was well forward - the gear level is impeded. It is a bit tight up front but seating is very comfortable and with good back support.

Side-mirrors are internally adjustable on both models and I liked the tiny ignition point light that comes on to help you find the ignition switch in the dark.

The I7RD costs £5,269,88 to get on the road and GTi J6,274,01.

### A COMPUTER FOR EVERY CAR

Worried about falling asleep at the wheel? In Nissan's Maxima an optional "drowsiness-warning system" will recognize signs of driver fatigue and sound alarm. Nissan's backup-alarm system sounds a warning when you get close to other cars, curbs or obstacles.

General Motors, Ford and Chrysler also combine autos and computers in novel ways. They offer such features as self-adjusting suspensions, sensors that alter fuel mixture for efficient combustion and systems that diagnose a car's mechanical troubles. Detroit expects to install devices to map routes- and allow drivers to locate their positions on dashboard-display maps of city street Another product, similar to airliner flight recorders, would store details of a car's operation to aid in repairs.

The Japanese have gone further in using microchips to enhance creature comforts and safety. Honda has a "smart gearshift." As a driver shifts the four main gears, a microprocessor controls three intermediate gears for smoothness and better fuel economy. A radar autocruise system under study gauges the distance from vehicles in front and warns drivers when it senses an impending collision. Also possible is a car that administers a sobriety test. To start the car, a driver breathes into an analyzer. If he or she has had too much, the car won't start.

### **1. History of the automobile**

The history of the automobile begins as early as 1769, with the creation of steam engined automobiles capable of human transport. In 1806, the first cars powered by an internal combustion engine running on fuel gas appeared, which

led to the introduction in 1885 of the ubiquitous modern gasoline- or petrol-fueled internal combustion engine. Cars powered by electric power briefly appeared at the turn of the 20th century, but largely disappeared from use until the turn of the 21st century. The early history of the automobile can be divided into a number of eras, based on the prevalent means of propulsion during that time. Later periods were defined by trends in exterior styling, and size and utility preferences.

## **2. Inventors-trailblazers**

German engineer Charles Benz, the inventor of set of automobile technologies, is considered the inventor and the modern car. Four-cycle petrol (ra3OJinHOBbifi) an internal combustion engine which represents the most widespread form of modern self-propelled movement — working out of German inventor Nikolausa Otto. The similar four-cycle diesel engine also has been invented by German Rudolf Dizelem. The hydrogen fuel element, one of the technologies proclaimed as replacement for gasoline as an energy source of cars, basically has been found out by other German Shyonbejn Christian Fridrihom in 1838. The car on electric batteries is obliged by the occurrence to one of inventors of an electric motor to Hungarian Anosh Jedliku and invented in 1858 the lead-acid battery to Gaston Plante.

## **3. 17th century**

Ferdinand Verbiest, a member of a Jesuit mission in China, built the first steam-powered vehicle around 1672, designed as a toy for the Chinese Emperor, it being of small scale and unable to carry a driver or passenger but, quite possibly, the first working steam-powered vehicle ('automobile').

Steam-powered self-propelled vehicles large enough to transport people and cargo were first devised in the late 18th century. Nicolas-Joseph Cugnot demonstrated his fardier a vapeur ("steam dray"), an experimental steam-driven artillery tractor, in 1770 and 1771. As Cugnot's design proved to be impractical, his invention was not developed in his native France. The centre of innovation shifted to Great Britain. By 1784, William Murdoch had built a working model of a steam carriage in Redruth, and in 1801 Richard Trevithick was running a full-sized vehicle on the road in Camborne. Such vehicles were in vogue for a time, and over the next decades such innovations as hand brakes, multi-speed transmissions, and better steering developed. Some were commercially successful in providing mass transit, until a backlash against these large speedy vehicles

resulted in the passage of the Locomotive Act (1865), which required self-propelled vehicles on public roads in the United Kingdom to be preceded by a man on foot waving a red flag and blowing a horn. This effectively killed road auto development in the UK for most of the rest of the 19th century; inventors and engineers shifted their efforts to improvements in railway locomotives. (The law was not repealed until 1896, although the need for the red flag was removed in 1878.)

The first automobile patent in the United States was granted to Oliver Evans in 1789. Evans showed its first successful self-propelled car which was not only the first car in the USA, but also and the first car-amphibian as it was capable to travel on wheels by the ground and by means of blades on water.

#### **4. Internal combustion engines**

Benz's car, 1885. The first serial car with an internal combustion engine. 1870, Vienna, Austria: the First-ever transport on gasoline. «The first car Markusa». The second car Markusa 1888 (the Technical museum of Vienna)

Early attempts of manufacturing and use of internal combustion engines have been complicated in the absence of suitable fuel, especially liquid, and early engines used a gas mix.

Early experiments with use of gases have been spent by the Swiss engineer Francua Isaakom Rivasom (1806) which have constructed an internal combustion engine working on vodorodno-oxygen mix, and Englishman Semjuelem Brown (1826) experimenting own engine on hydrogen fuel as a vehicle to Shuters Hill , southeast London. Belgian Etena Lenora with an one-cylinder internal combustion engine on hydrogen fuel was made by test run from Paris in Zhuanvil-Le-Pon . In 1860 having covered about nine kilometres approximately for three hours. The late version worked on coal gas. Delamar-Debutevilsky. The car has been patented and tested in 1884.

About 1870 in Vienna, Austria (then Austro-Hungarian empire) inventor Zigfrid Markus. Has placed a liquid internal combustion engine on the simple cart that has made its first person using a vehicle on gasoline. Today this car is known as «the first car Markusa». In 1883 Markus has taken out the German patent for low-voltage system of ignition of type Maraem It was only its first automobile patent. This technology has been used in all further engines including in four-seater to "the second car Markusa» in 1888/89. Ignition in a combination with



«the carburettor with BparauiomMeca brushes» have made a design of the second car very innovative.

Well-known that the first really used car with the petrol engine has been designed simultaneously by several independent German inventors: Charles Benz has constructed the first car in 1885 in Mannheim. Benz has taken out the patent for the car on January, 29th 1886 and has begun the first release of cars in 1888 after his wife Berta Benz has shown by means of the first longdistance trip from Mannheim to Pforst and back in August 1888 that crews quite approach for daily use. Since 2008 this event isn'ted by the Memorial line of a name Berty Benz.

Soon, in 1889 in Stuttgart Gottlieb Daimler and Wilhelm Majbah have designed absolutely new means of transportation which reflected as the car, instead of the horse vehicle equipped with the engine. It usually attribute the invention in 1886 of the first motorcycle, however, in 1882 Enriko Bernardi from University of Padua has patented the one-cylinder petrol motor in volume of 122 sm<sup>3</sup> (7,4 cubic) capacity of 0,024 h.p. (17,9 Vt) and has established it on a tricycle of the son that allows to consider it at least the candidate on the invention of the first car and a motorcycle. In 1882 Bernardi has increased so that it was capable to transport two adults the person.

One of the first four-wheel cars in Britain, working on gasoline has been constructed in Birmingham in 1895 by Frederikom William Lanchesterom, it had been patented a disk brake, and the first electric starter has been established on Arnold, adaptation Benz-conducted, issued with 1885 for 1898.

In this turmoil many trailblazers have been almost forgotten. John William Lambert of Ohio in 1891 has constructed the three-wheeled car which has burned down the same year. And Henry Nading from Allentown, Pennsylvania has designed the four-wheel. It is rather probable that such inventors was more.

## **5. Veteran era**

The first production of automobiles was by Karl Benz in 1888 in Germany and, under licence from Benz, in France by Emile Roger. There were numerous others, including tricycle builders Rudolf Egg, Edward Butler, and Leon Bollee. Bollee, using a 650 sm<sup>3</sup> (40 cubic) engine of his own design, enabled his driver, Jamin, to average 45 kilometres per hour (28.0 mph) in the 1897 Paris-Tourville rally .By 1900, mass production of automobiles had begun in France and the

United States. The first company formed exclusively to build automobiles was Panhard et Levassor in France, which also introduced the first four-cylinder engine. Formed in 1889, Panhard was quickly followed by Peugeot two years later. By the start of the 20th century, the automobile industry was beginning

to take off in western Europe, especially in France, where 30,204 were produced in 1903, representing 48.8% of world automobile production that year.

The first car in Japan, French Panhard-Levassor in 1898. Magazine article «World's work», 1903

In 1893 in the United States brothers English Charles and English Frenk Djurea have based company Duryea Motor Wagon Company, become first American company-manufacturer of cars. However at this production phase of cars Ransom Eli Olds with its company Olds Motor Vehicle Company (later known as Oldsmobile) dominated. Its large-scale assembly line has been started in 1902. Same year Cadillac (copied from English Henry Ford Company), Vinton and Ford let out cars in thousand.

Within several years of hundred manufacturers on all Western world began to let out cars by improbable quantity of various technologies. Steam, electric and petrol cars competed decades while in 1910 petrol internal combustion engines didn't become dominating. Cars with two and even four engines were developed, and the working volume of engines reached dozen liters. During this period many modern workings out, including gas and electric hybrids, overhead valves engines, the top camshafts, a drive on all wheels have been tested and rejected. In 1898 Louis of Renault has established on De Dion-Bouton (De Dion-Bouton). The driveshaft and differential with conic gear wheels, having created «probably the first in the history of joints». It has allowed Louis and his brothers to take the place in motor industry. In 1902 of Renault began to establish drum-type brakes. The next year the Dutch developer Jakobus Spajker has constructed the first racing car with a full drive. This car never participated in competitions and till 1965 and Jensen FF all-wheel drive sports cars in a batch production weren't.

To 1900 it was already possible to speak about national motor industry in many countries, including Belgium (making Vincke, copy Benz; Germain — pseudo Panar; Linon and Nagant, both are based on Gobron-Brillie), Switzerland (leading manufacturers Fritz Henrich, Rudolf Egg, Saurer, Johann Weber, and Lorenz Popp), Swedish Vagnfabrik AB, Hammel (based A. F. Hammel and H. U.

Johansen about 1886 in Copenhagen, Denmark), Irgens (from Bergen, Norway, 1883, but without appreciable success, Italy (where in 1899 has appeared FIAT), and even in Australia (where Pioneer has opened a workshop in 1898, from manufacture already then become outdated, working on paraffin a van). In the meantime, Kokh has begun deliveries of cars and trucks from Paris to Tunis, Egypt, Iran and the Dutch East India. Foreign trade became global.

On November, 5th, 1895 in the USA English George Selden has taken out the patent on 2-taktnyj the automobile engine (U.S. Patent 549,160). This patent disturbed more, than to promote development of cars in the USA. The majority of the large American companies have been licensed by the patent of Sendlena, and have been compelled to pay for each made car. Brothers of Studbejker, becoming the leading manufacturer of horse vehicles in the world, have passed to manufacture of electric cars in 1902, and to petrol engines in 1904, but thus continued to make horse vehicles till 1919. In 1908 in Peru the first car (English Grieve) on continent of the South America has been made.

However during this period — the period of veterans — cars were considered more as a fashionable novelty, rather than as rather useful device. Breakages were very frequent, fuel was hard for getting, suitable for movement on cars of roads was a little, and fast development of branch meant that the one-year-old car practically cost nothing. The solving events which have proved utility of the car: arrival Bertly Benz 1888 on the big distance; it has passed more than 80 km (50 miles) from Mannheim to Pforzheim to show potential of vehicles which her husband Charles Benz, and successful transcontinental arrival English made Horatio Nelsona Jackson who have crossed the US A in 1903

## **6. Bronze or Edvardiansky era**

The car of Ford T parked at Dzhelongsky library to its opening. Australia, 1915.

Received the name from widespread application of bronze in the USA, English Bronze (or Edvardiansky) the era proceeded since approximately 1905 prior to the beginning of the First World War in 1914 1905 became a mark in development of the car, noted the moment when more cars began to be on sale not to enthusiasts, and the usual consumer.

Within 15 years making this era, various experimental workings out and alternative engines will be allocated. Though the modern tourist car has been

invented earlier, only with a wide circulation of system Panara-Levassora there were recognised and standardised cars. The specification of this system provided the rear-wheel car with an internal combustion engine located in front and transmission. Traditional, similar to vehicles, vehicles have been quickly forgotten, and English made of a skin and a tree of a body have given way English to bodies with an input behind and to other cheaper bodies.

Development of automobile technologies during this era was fast, partly thanks to existence of hundreds the small manufacturers competing for attention of the world. The basic workings out consisted in electric system of ignition (the motor-generator on Arnold in 1898 though laurels are reaped by Robert Bosh 1903), an independent suspension bracket (actually thought up Bollee in 1873) and brakes on all four wheels (Arrol-Johnston Company of Scotland in 1909) . For a suspension bracket springs though the set of other systems was still applied also were widely used, the angular steel has replaced the strengthened tree in a design of the chassis. Transmissions and management of giving of fuel that has allowed to move with various speed though cars in the majority had a discrete set of speeds, instead of infinitely variable system familiar on cars of later periods were widely adopted. For the first time there was also the safe glass patented by John Wood in England in 1905 (It does not become the standard equipment before occurrence Rickenbacker in 1926)

On peak of popularity between 1907 and 1912 were in the USA motor vehicles with the big wheels (reminding horse vehicles till 1900). Them made more than 75 companies, including Holsman (Chicago), IHC (Chicago) and Sears (sold under the catalogue). These vehicles have been buried by Model T. In 1912 Hupp in the USA (bodies Hale and Irwin) and BSA in Great Britain for the first time have applied all-metal bodies. In 1914 Dodge (which made bodies for Model) has joined them. And though has passed as early as 20 years till the moment when the all-metal body became standard, this change meant improvement of the offer of a tree of the first-rate quality to manufacturers of furniture.

Examples of cars of this period:

1908—1927 Ford Model T — the most widespread car of this epoch. In it planetary transmission and a pedal control system was applied. The car has won «the car of a century» at competition.

1910 Mercer Raceabout — being considered as one of the first racing cars, Raceabout embodied enthusiasm of the driver, as well as its equally conceived colleagues American Underslung and Hispano-Suiza Alphonso.

1910—1920 Bugattis Type 13 — remarkable city and the racing car in which have been embodied the advanced engineering workings out and design. Similar models were Type 15, 17, 22 and 23.

## **7. The vintage era**

The era the vintage cars proceeded from the end of the First World War (1919) before crash of Uoll-strit in 1929 During this period cars with a forward arrangement of the engine, the closed body and the standardised management became dominating. In 1919 90 % of cars were issued with

an open body; to 1929 90 % — with closed. Fast rates development of an internal combustion engine proceeded: at top of a ruler there were MHoroKiiianaHHHe engines with the top camshaft, and for superrich clients have been thought up V-shaped eight - twelve - and even engines. Malkom Louhed (Lokhid) has invented hydraulic brakes also in 1919 Such brakes have been applied by Djuzenbergom (English) On their Models And 1921 Three years later Germann Rejsler from the Volcano the Motor has invented the first automatic transmission with a two-level planetary transmission, the converter of the moment and a blocking muff. This transmission was never made. Its similarity becomes accessible as an option only in 1940 At the very end of an era of the vintage cars in France has been invented glass (today standard equipment for lateral windows).

Typical cars of the vintage epoch:

1922—1939 Austin 7 — Austin 7 was the most widely copied car for all history of cars. This model served as the sample for all cars, from BMW to Nissan.

1924—1929 Bugattis Type 35 — Type 35 one of the most successful racing models for all history of cars, has gained more than 1000 victories within 5 years.

1922—1931 Lancia Lambda — very advanced car the then. The first car with an integral bearing body and an independent forward suspension bracket.

1925—1928 Hanomag 2 / 10 PS — an early example of streamline style, without separate bumpers (wings) and footboards.

1927—1931 Fords Model A (1927-1931) — after Ford too long let out Model T of a bronze era, the company has torn with the past having begun a new series with Model A and has been collected more than 4 million cars that has made her sold model of an epoch 1927.

1930 Cadillacs V-16 — developed on a pique of the vintage epoch, Cadillac with V-shaped the engine together with Bugatti the Grand piano it is possible to consider as the legendariest super-lux cars of an epoch.

### **8. Pre-war era (before the Second World War)**

The pre-war part of a classical era has begun with Great depression of 1930 and has ended with restoration from consequences of World War II as which usually consider come to the end in 1948 during this period on sales dominate integrated a bumper and completely closed bodies, and new types of bodies a sedan in a back part integrate even a luggage carrier for cargoes. Old, phaetons and city cars with open top have been forced out by the end of an era as wings, footboards and head fires have gradually been integrated into a body of the car.

To 1930 the majority of the technologies of mechanics used in today's cars though some tilings were has been invented and are attributed to someone else. For example, the forward drive was Andre Citroen and is presented in Traction Avant in 1934 though it has appeared several years earlier in road cars made Alvisom and the Cord, and in racing cars from Miller (and has probably appeared in 1897). Similarly, independent suspension bracket has originally been invented Amedee Bollee in 1873, but has not got to a batch production before occurrence Mercedes Benz 380 in 1933 that has forced to use more widely it in the American market. As a result of consolidation and a growing of motor industry, partly thanks to influence of Great depression, by 1930 the quantity of manufacturers of cars was sharply reduced.

Samples of pre-war cars:

1932—1939 Alvis Speed 20 and Speed 25 — the first cars with completely synchronised transmission.

1932—1948 Fords V-8 — application powerful V8 with a flat head of cylinders in the mass car have established new standards of efficiency and installed power per employee.

1934—1940 Bugattis Type 57 — the individual high quality car for rich.

1934—1956 Citroen Traction Avant — the first mass car with a drive on forward wheels, is constructed on a bearing body.

1936—1955 MG series T — a sports car for the reasonable price, calculated on youth.

1938—2003 Volkswagens Beetle ("bug") — conceived as the effective and cheap car in nazi Germany became most aojironpOH3BOflflmHMca in the world — was issued more than 60 years with the minimum changes of a base design; the most mass car in the world — some tens millions copies are let out in many countries; the cult car has taken the fourth place at competition «the car of a century»; the car has restyling a new variant of recognised design and in the XXI-st century.

1936—1939 Rolls-Royces Phantom III — top of pre-war engineering thought with engine VI2 had technological novelties which have appeared in cars of many other manufacturers only in 60. The highest quality and installed power per employee of quality.

### **9. A post-war era**

1946 ГАЗ-M-20 "Victory" with a revolutionary body completely pontoon type

1953 Morris Minor (English) a Series II

1954 Plymouth Savoy Station Wagon, one of the first all-metal versatile persons

Jaguar E-Type

The representative of the Golden Age American (so-called) autodesign and so-called English the Tank of the Yankee in Havana, Cuba

The wedge-shaped contour English NSU Ro was often copied 80 1967 years the next decades, unlike its technical innovation — the engine

The Italian Fiat-124 which were issued also in several other countries, including as VAZ-2101 in the USSR where became a symbol of car industry and mass automobilization Range Rover, one of representatives of jeeps Pontiac Trans Sport, one of the first one-volume cars

After the Second World War in automobile design it was established revolutionary bearing a body completely pontoon type (without acting wings and their rudiments, footboards and headlights), issued which representative the Soviet car GAZ-M-20 "Victory" became almost first-ever.

Automobilization has definitively recovered from orientations for military needs in 1949, in a year when in the United States have been shown engine V8 and new bodies from marks of Dzheneral Motors, Oldsmobil and Cadillac. In Great Britain the automobile market has been woken by Morris the Minor (English) (1948) and Rover 114 (English) (1949), and also Ford Konsul 1959 with an integral body on an amortisation suspension bracket. In Italy Entso of Ferrari began the 250th series, and Ljanča at the same time has let out revolutionary Aureliju (English) with the V-shaped six-cylinder engine.

Throughout 1950 capacity of the engine raised and speed of transport grew, the design became more complex and skilful, and cars extended worldwide. Alec Issigonis's tiny cars Mini and 500 Fiat sanojiomuiH all Europe while in Japan similar cars of an easy class have been put on wheels for the first time. Legendary Volkswagen Beetle has endured Hitlerite Germany to excite the market of tiny cars of America and the world. Also the new class of pseudo-sports cars Gran Turismo (GT), as well as a series of Ferrari America became (English popular in luxury embodied for the first time in American Cadillac Eldorado Brougham, has appeared again after a long break and together with the big dimensions, engines and elaborate design with aerodynamic forms and elements began to characterise the Golden Age American (so-called) autodesign.

To the end of the century a multiten years' world big three of concerns-motor-car manufacturers from the USA (Dzheneral Motors, Ford, a Crysler) also began to lose positions, conceding first of all to concerns of Japan which has selected a rank of the world leader of motor industry at the USA, has begun intensive development of automanufacture in the new countries, first of all the Asian region, the wide practice proceeding and until now, has got creation of transnational concerns and consortia of motor-car manufacturers, and also transnational "platforms" of the cars which are issued in the different countries.

Examples of post-war cars:

1946—1958 GAZ-M-20 "Victory" — the Soviet car, almost first-ever an issued revolutionary body completely pontoon type.

1948—1971 Morris Minor — the typical post-war car, was very popular, and was on sale worldwide.



1953—1971 Chevrolets Bel Air and 1953—2002 Cadillacs Eldorado Brougham — in the first generations the brightest representatives of the Golden Age American (so-called) autodesign Europe and then in the world. The extreme

1955—1976 Citroen DS — bright and few representative unusual a running gear (hydropneumatic) and design (one of the most recognised) thanks to which became the frequent filmstar; has taken the third place at competition «the car of a century».

1959—2000 Mini — the small cult car, was issued throughout four decades and is one of the most popular and recognised cars of that time; has taken the second place at competition «the car of a century»; has restyling a new variant and in the XXI-st century.

1961—1975 Jaguars E-type — Type E has allowed the Jaguar to remain in business and show-room and served as the standard of design and innovations 60.

1963—1989 Porsches 911 — cult and desired, not cheap, but rather mass sports car which has glorified the mark; has taken the fifth place at competition «the car of a century»; has the modernised variants of recognised design and in the XXI-st century.

1964-n.v. Ford Mustang — cult model become to one of the most sold and the most desired for collectors of cars of an epoch.

The 1966-end of XX century of Fiat-124 — the effective and cheap car was issued in many countries, including in the USSR (VAZ-2101) where has provided mass automobilization; had also in the different countries many the modernised variants-series, continuing to be issued and in the XXI-st century.

1967 NSU Ro 80 — the first attempt to make the mass car with the engine which and has not found a wide circulation; the basic wedge-shaped profile of this car was often copied the next decades.

1969 Datsun 240Z — one of the first sports cars of Japanese manufacture, became a hit in the North America, has given the future to Japanese motor industry. It has been accessible, qualitatively made, was a success, both in a motor show, and on a line.

1970-n.v. Range Rover — one of representatives of expensive popular jeeps

1984-n.v. Renault Espace — the first one-volume car

1989—1999 Pontiac Trans Sport — one of the first and bright representatives of one-volume cars

## **2008 MAZDA KAZAMAI**

Last year, Mazda Motor Corporation announced that it was embarking on a new direction with technology development. The strategy, called Sustainable Zoom-Zoom, would focus on producing vehicles that combine Mazda trademark driving excitement with further evolved environmental and safety technologies.

Sustainable Zoom-Zoom and Mazda Nagare design have been combined in the Mazda Kazamai concept car which showcases how Mazda could deliver a vehicle in the near future that is exhilarating to look at and exciting to drive, with an improved average fuel economy by 30 percent and producing far fewer emissions than today production models. This is Mazda at its best a cool, athletic compact crossover, with next-generation environmental performance. Designed with the Russian compact SUV segment in mind, Kazamai gives a glimpse at where Mazda is heading with a possible future compact crossover, (y

### *Russia booming Automobile Market*

Between 2004 and the end of 2007, Russia automobile market grew by about 1.28 million cars, and in the process became Europe second largest car market after Germany. During this same period, Mazda quickly established itself as one o Russia most popular car brands, increasing sales from 8,565 units in 2004 to over 50,000 units last year six times more than 2004.

*One of the country biggest segments is the sports utility vehicle (SUV),  
representing*

16 percent of the total sales volume in 2007. Between 2004 and 2007, the segment became 10 times larger and this growth is expected to continue over the mid-term in Russia. Mazda mid-sized sports crossover SUV, the CX-7, has been on the market for less than a year in Russia and has already found over 7,900 customers easily Mazda largest market for the CX-7 in Europe.

The Mazda Kazamai concept car addresses the growing popularity of SUVs in Russia and gives a strong hint at where Mazda might be going with a compact crossover SUV. Small, lightweight with dynamic styling, low-consumption, a next-generation Mazda powertrain, it is meant to appeal to young, upwardly-mobile Russians with a strong sense of style and urban lifestyle

demands athletic looking on the outside and displays an evolved Nagare flow design. Unlike previous concept cars, Mazda Kazamai styling represents powerful natural movements that are emotionally expressed through three-dimensional motifs stretching over the whole body, representing a fusion of design and functionality.

Mazda Kazamai is an impressive combination of packaging requirements and design aesthetics. With a width of 1,930 mm and a length of 4,520 mm, it is slightly larger than the current Mazda3, with room for SUV comfort and functionality on the inside. Yet, because it is only 1,500 mm high, has a flat roofline and very short rear overhangs, it also has a sporty coupe look with the promise of driving fun. The innovative body design features flared fenders that emphasize SUV-like strength and a cabin befitting a sports car. The wedge-shaped profile was designed to evoke the image of a sleek arrow cutting through a mighty wind. In particular, the body design between the front wheel arches and the roof pillars is intended to express the agility and dynamism of wind gusting along the side of the vehicle. The panel lines on the sides represent swift and elegant crosswinds, further accentuating the dynamic and stylish body design. The bonnet itself is lower in the centre than on the sides, which emphasizes the car powerful front fenders that accommodate large, 22-inch wheels.

The wheel design continues the crosswinds motif with each spoke carefully twisted and larger outside than in the centre, providing a strong sense of movement. The five-point grille is integrated into the body to create a clean and light image which, together with the flared front lower sides contributes to excellent aerodynamic characteristics. The aerodynamics are further improved by making the air intakes as small as possible. The side sill panels and rear combination light covers also help to control the wind flow and reduce drag even further.

#### *Interior SUV Functionality with Driving Safety*

Mazda Kazamai is not only a pure expression of speed and power, it also accommodates up to four passengers with compact SUV comfort and functionality. It was designed to fulfil various driver and vehicle interfaces so as to support the driver in enjoying safe and stress-free driving, with well considered human machine interface visibility and operation cockpit. This is one of Mazda important areas of the Sustainable Zoom-Zoom plan.

### *Lightweight and Aerodynamic*

Weight reduction and superior aerodynamic performance are core technologies to improve both driving pleasure and environment performance, especially fuel economy. Mazda will further focus on these crucial factors in order to achieve the goals of the Sustainable Zoom- Zoom plan. Despite its powerful exterior look, the Mazda Kazamai concept aerodynamic performance is achieved through a flat floor panel, a rear diffuser, and a low roof line. The aim was to make the Kazamai aerodynamics more than 10% better than other vehicles in its class.

Lightweight materials and new processing/joining technologies were put to effective use. Aluminium or aluminium-alloy is used for the bonnet, chassis and engine block. The designers aimed to make it 100 kilograms lighter than similar models by employing plastics for the panels, fenders and the engine cover. These features also contribute to advanced handling and improved fuel economy and CO2 emissions.

#### *Next-Generation Powertrain 30 Percent Improvement in Fuel Consumption*

The ideal match for the Mazda Kazamai concept would be a next-generation 2.0-litre direct-injection petrol engine, which Mazda engineers are currently developing. This engine delivers a balance of sporty driving especially in a compact car like the Mazda Kazamai with good environmental performance. Mazda Kazamai will feature a DISI\* engine based on the current Mazda CX-7, with advanced technologies to minimize energy loss and vastly improved thermal efficiency. Mazda next generation 2.0-litre DISI petrol engine also has combustion control technology and variable valve control that deliver strong torque throughout the rev-range for excellent engine response as well as superior fuel economy. A next-generation catalyst also ensures superior emissions performance. (\*DISI: Direct Injection Spark Ignition)

This is coupled to a lightweight and next-generation compact six-speed automatic transmission that is highly responsive and delivers the direct feel of a manual transmission, and four-wheel drive for superior traction. In combination with Kazamai next-generation aerodynamics and its lightweight body outlined above, this powertrain would deliver an estimated 30 percent improvement in fuel consumption and emissions (versus the current MZR 2.0-litre petrol) without compromising driving pleasure.

### *Advanced Safety and Security Features*

Mazda Kazamai is not only lightweight, fuel-efficient and fun to drive, it is also designed with safety as a key element. Its advanced body shell is a product of a new body structure programme currently being refined at Mazda with a lightweight structure that provides high levels of crash safety. Mazda Kazamai also has a long list of active safety features including roll stability control, blind spot monitoring to assist lane change, a pre-crash safety system and advanced dynamic stability control (DSC) to support the driver. And to meet future pedestrian safety requirements, it has soft plastic fenders and a shock-cone aluminium bonnet that is very efficient in absorbing impact energy.

Also onboard the Mazda Kazamai is a personal security system. This advanced system monitors the area around and inside the car, and has an automatic alert system which informs the driver in the event of an emergency to help to protect both the owner and occupants.

### **2008 AUDI RS6 SEDAN**

The new Audi RS 6 Sedan has launched itself to the very top of the business class - as the most powerful series- production sedan in its segment. The sporty tiptronic transmission and the quattro all-wheel drive system, which has a slightly rear-driven emphasis, transfer the immense power onto the road with no loss. Uncompromising performance is also provided by the suspension with Dynamic Ride Control (DRC) damper control and the mighty brakes. Like all RS models from quattro GmbH, the new RS 6 is a car of supreme dynamism that makes no compromise in its qualities for everyday use.

#### *The engine*

High performance in the business class - the new RS 6, together with its sister, the RS 6 Avant, is the most powerful series-production Audi ever. With an output of 426 kW (580 hp) and 650 Nm (479.42 Ib-ft) of torque, it easily beats its competitors. The V10, which generates its output from 4,991 cc of displacement, is based on the engines fitted in the Audi S6 and S8, but it has been newly developed in virtually every detail. It is a conglomeration of glorious technologies that are taken directly from the world of motor sports - the ten- cylinder concept, FSI gasoline direct injection, the twin turbochargers and the dry-sump lubrication.

The two turbochargers - one for each cylinder bank - provide for extremely powerful, homogenous thrust, which is available across almost the entire engine speed range. The peak torque of 650 Nm (479.42 Ib-ft) is available across a broad and high range from 1,500 to 6,250 rpm, while maximum output is generated in the range from 6,250 rpm to the maximum engine speed of 6,700 rpm.

#### *The powertrain*

The superior output of 426 kW (580 hp) requires a powertrain that is just as potent. On the new Audi RS 6, a sportily configured six-speed tiptronic transmission feeds the torque to the quattro permanent all-wheel drive system, which is also configured for maximum dynamism.

A Torsen center differential (Torsen = torque-sensing), located longitudinally in the drive train, distributes the torque to the front and rear axle. In normal situations, 40 percent of the force is fed to the front axle and 60 percent to the rear - a slightly rear-driven emphasis. This further underscores the dynamism of the RS 6.

#### *The suspension*

You cannot afford to have weaknesses if you want to dominate the competition. This motto also bears true for the suspension of the new RS 6. The advanced suspension, the high-tech Dynamic Ride Control (DRC) damping system and the mighty braking system form a package that perfectly controls the enormous power of the drive system. The suspension of the new RS 6 combines a high standard of longdistance comfort and relaxed straight-line driving with impressive performance. Dynamic steering characteristics, an exact response, uncompromising precision and supreme stability forge links between the race circuit and the freeway.

The operating principle of the DRC is simple. The diagonally opposite shock absorbers are linked by two oil lines and a central valve. If the RS 6 takes a corner at high speed, the valves react instantaneously to the oil flow at the compressed shock absorber for the front wheel on the outside of the bend. They strengthen the support provided, reduce lateral tilt and so increase dynamism.

If requested, Dynamic Ride Control (DRC) can be supplemented by three-stage variable damping characteristics. The so-called sports suspension plus allows the driver to customize his driving experience at the MMI control terminal

according to the route profile and his own wants and desires. In the "comfort" setting, the sports suspension plus provides for a good level of ride comfort. The "dynamic" mode allows a highly active driving style, while "sport" mode provides for maximum driving precision.

For any exceptional athlete, slowing down is at least as important as sprinting ability. The new Audi RS 6 is equipped with a high-performance brake system that is built to withstand extreme loads. Even the standard steel disks are designed to withstand maximum loads. Their aluminum brake disk chamber is linked to the cast iron friction ring with metal pins - a floating mount that boosts performance at high loads while reducing weight. The cooling ducts and the axial perforation of the disks fulfill the same tasks.

The front brake disks have a diameter of 390 millimeters (15.35 in) and are actuated by fixed six-piston aluminum calipers. The rear disks have a diameter of 365 millimeters (14.37 in) and single-piston floating calipers. The calipers are painted black and adorned with the RS logo at the front.

In conjunction with the 20-inch wheels, Audi can also fit a ceramic brake system. This also has ventilated and perforated disks that are made from a composite material in which high-strength carbon fibers are embedded in hard, abrasion-resistant silicon carbide. They have an impressive diameter of 420 millimeters (16.54 in) at the front and 356 millimeters (14.02 in) at the rear, yet they weigh 12.2 kilograms (26.90 lb) less than the steel disks, reducing unsprung masses in favor of driving dynamics.

### *Interior & Equipment*

The interior of the new RS 6 is an oasis of wellness. High-grade materials such as carbon fiber, aluminum, leather and Alcantara have been selected and employed with the uncompromising, immaculate quality for which Audi and quattro GmbH are renowned. They create an ambience of cultivated dynamism and form an elegant dress for the hightech package that can be found underneath.

A standard feature of the new RS 6 is a very special steering wheel - the leather-covered RS multifunction sport steering wheel. Its rim, which can optionally be trimmed in full-grain leather, is particularly substantial and is flat-bottomed, like on a racing car. The spokes incorporate multifunction buttons for operating the telephone, navigation system and audio system. Shift paddles for the tiptronic transmission allow fast manual gear changes, while an RS 6 signet

provides a visual highlight. Audi is also able to fit the leather-covered multifunction sport steering wheel of three - spoke design with all-round rim at no extra cost.

On the inside, the new RS 6 has electrically adjustable sports seats with Silk Nappa leather upholstery. The front and outer rear seats can be heated. Carbon inlays, a cockpit front panel in piano finish and RS 6 logos are visual highlights in the interior. Safety and comfort are also of the very highest standards. An automatic anti-dazzle interior mirror, a leather - covered RS multifunction sports steering wheel with shift paddles and the deluxe automatic air conditioning plus provide a sense of luxury.

The new RS 6, which will be in German showrooms from mid-October priced 105,550 euros, is fitted with standard equipment that underlines its dynamic, exclusive character.

### **2004 Nissan Pathfinder Armada Brings New Levels of Power.**

Roominess and Innovation to Full-Size Light Duty SUV Class.

The full-size 2004 Nissan Pathfinder Armada, the newest member of Nissan's diverse family of authentic sport utility vehicles, takes the Pathfinder name and reputation for innovation to a new dimension. Designed to be a full-size SUV for full-size lives, the Pathfinder Armada makes its world debut today at the New York International Auto Show. The new Nissan Pathfinder Armada will be available at 1.100 Nissan dealers nationwide beginning in fall 2003.

The Nissan lineup of SUV's now includes vehicles for practically every use or desire — from the «everything you need, nothing you don't» simplicity of the popular Xterra. to the versatile Pathfinder, to the «on - road adventurer» Murano, and now the powerful, roomy, eight-passenger Pathfinder Armada.

«The new Pathfinder Armada is designed for owners with active lifestyles, families that need all of the traditional full-size SUV strengths but who are looking for a higher level of style, rewarding features and the flexibility that encourages spontaneity and adventure,» said Bill Kirrane, vice president and general manager, Nissan Division, Nissan North America, Inc. «More than just a passive carrier for passengers and their cargo Pathfinder Armada is a vehicle that allows — and inspires — larger-than-life moments.»



## Expressive Exterior Styling

The new Pathfinder Armada offers a distinctive image, led by its advanced design concept. The combination of a long wheelbase and manageable overall length gives the Pathfinder Armada enhanced stability and handling, and a longer interior with plenty of cargo room — yet short front and rear overhangs for good maneuverability.

In researching the full-size SUV market, Nissan designers and product planners found that many SUV buyers are looking for fresh styling appearance beyond the current offerings in class.

“Along with improved driving dynamics and more functional flexibility, one of the key unmet needs of the segment is uniqueness and distinctiveness,” said Kirrane. “Buyers are ready for something new and different not just another generic SUV.”

The Pathfinder Armada design starts with its wide stance, with the body gesture following from the tire sidewalls up. The headlights are straightforward but powerful, the hood massive yet refined. The sheer A-pillar design calls attention to the tight, tailored precision of the upper body with the B-, C- and D-pillars acting as a frame for the highly polished feel of the body structure. The tailgate has a substantial look without feeling heavy and the massive bumpers project the Pathfinder Armada's strength and power.

Other exterior features include a standard body-color grille and chrome front door handles, dual power- adjustable heated chrome side mirrors (with puddle lamps on LE models), standard running boards, privacy glass for the 2nd and 3rd rows and available power rear liftgate, manual flip-out rear quarter windows (power-operated on LE models) and halogen headlights. All models are also offered with a standard proximity sensor system (back-up obstacle warning) in the rear bumper.

«From the stepped-up roofline and two-piece roof rack to the standard 18-inch wheels and tires, you get a strong sense of quality, style and individuality. There's a familiar Nissan link without being a virtual copy of our other SUVs — a freshness that we think will endure for a long time to come,» said Kirrane.

## An Inspired Interior Design

Though the Pathfinder Armada is Nissan's first full-size SUV, it follows in the tradition of other authentic Nissan SUVs in providing an interior environment

designed for active families. Its advanced, ergonomic interior styling combines a modern appearance with traditional ruggedness.

Key to the Pathfinder Armada design concept is exceptional versatility, roominess and flexibility — including standard fold-flat 2nd and 3rd row seats, the most 2nd row leg room in the full-size, light duty SUV class, choice of 8-passenger seating or 7-passenger. ample cargo space behind the 3rd row seat, and a full-length overhead amic with map lights, vents and available DVD Family Entertainment System.

In from, an 8-way power-adjustable driver's seat and available 6-way adjustable front passenger's seat provide a sense of comfort and luxury, while the fold-down front passenger seat features cup holders and a recessed “work area”. Three 12-volt power outlets are located on the console and instrument pad for use with cellular phones and portable electronic devices.

The 2nd row features a choice of a fold-flat 2nd row bench seat or available fold-flat 2nd row captain's chairs with an innovative, removable 2nd row centre console. The 2nd row leg room of 41.9 inches (best in the full-size, light duty SUV class) provides passengers room to ride in comfort, while an available DVD Family entertainment System with two wireless headphones and remote control and 10-speaker BoseR audio system offers a variety of entertainment options. The Bose system's dual media capability allows use of radio and CD at the same time (headphones must be used to listen to second audio source).

The fold-flat 3rd row seats are designed for easy operation and easy access. «In addition, a thoughtful design feature raises the 3rd row seats higher than the 2nd row to facilitate easier conversation and better visibility the occupants.» said Kirrane.

There is also a large amount of storage space behind the 3rd row seat. With the 2nd and 3rd row seats folded down, the Pathfinder Armada offers a nearly flat floor. And, with the front passenger seat in the fold-down position, it is possible to carry items up to 10-feet in length with the rear liftgate closed. In addition to ample headroom, the 3rd row includes side storage bins and cupholders. The rear cargo area also includes ceiling and floor-mounted cargo hooks, while available accessories include a cargo net and cargo tray.

Up to 14 cupholders are available throughout the Pathfinder Armada, with some capable of holding 64- ounce size cups. Other storage areas include instrument panel side pockets, the center console main storage bin with de sockets, bottle holders in the front and side doors, and a driver's seat rear pocket.

#### The Power To Pursue Big Adventures

The Pathfinder Armada is the most powerful Nissan SUV ever built. Utilizing an all-new platform, the Pathfinder Armada features a rugged, fully boxed high-strength steel frame for enhanced crash performance and term durability; an independent double-wishbone rear suspension designed for improved roominess, comfort and responsive handling; and an all-new 5.6-liter DOHC 32-valve Nissan Endurance V8 engine offering one of the "highest standard horsepower/torque ratings in the full-size, light duty SUV class and the highest maximum towing - capacity in class (when properly equipped) of up to 9,100 pounds.

The Nissan Endurance V8, which is assembled at Nissan's advanced engine facility in Dechard, Tenn, is shared with the all-new Nissan Titan full-size pickup. Nearly 90 percent of the engine's impressive torque is available below 2,500 rpm where it's needed for hauling, towing or slow-speed off-road driving.

The engine's design includes features such as an aluminum engine block with cast iron cylinder liners, chain-driven dual overhead camshafts with silent single-stage timing chain, microfinished forged steel crankshaft and microfinished camshafts, molybdenum-coated pistons and electronic drive-by-wire throttle for precise control.

An electronically controlled 5-speed automatic transmission with tow/haul mode is standard on every emission utilizes a unique gear set chosen specifically for use in high torque situations, along with an advanced torque converter design for improved fuel economy and an advanced powertrain management for improved shift quality. The tow/haul mode revises the shift pattern when towing and

Pathfinder Armada models equipped with the towing package also receive a higher axle ratio and a transmission temperature gauge. Other tow package equipment includes a receiver hitch, heavy-duty radiator, additional 7-pin wiring harness plug, trailer brake pre-wiring, heavy-duty battery and rear suspension air levelizer.

The new Pathfinder Armada's off-road credentials are equally impressive, with 4-wheel drive models featuring an advanced full-time automatic control system. Utilizing all-wheel drive technology derived from Nissan's world-class Skyline GT-R sports coupe (rather than less sophisticated truck-based systems), the Pathfinder Armada 4WD system is designed to instantly distribute torque to all four wheels whenever road conditions warrant (up to 50 percent can go to the front wheels on demand), resulting in optimal traction with improved fuel economy and enhanced cornering capability.

The two-speed electronic transfer case allows the driver to select between auto, full-time 4-wheel drive and 4-Lo. The crawl ratio in 4Lo is among the best among competitors, providing enhanced low speed driving force and hill descending ability. Under normal driving conditions, 4WD Pathfinder Armadas operate in two-wheel drive mode.

The Pathfinder Armada's Anti-lock Braking System (ABS) includes standard off-road tuning for improved braking on loose gravel. There is also a high ground clearance (9.8 inches for 2WD models 4WD models). Heavy-duty skid plates (oil pan, fuel tank and transfer case) are available as part of the Off-Road Package. The Off-Road Package also includes RanchoR off-road performance shocks.

While the Pathfinder Armada is well equipped for rugged activities, it is equally capable of tackling everyday driving tasks with comfort and style. The standard all-steel front double-wishbone suspension with coil-over shock absorbers and stabilizer bar is matched with a responsive independent double-wishbone rear suspension.

Along with compliant handling, the rear suspension design also provides a high ride quality for 2nd and 3rd row passengers and maximizes rear interior space by minimizing the intrusion of suspension components into the interior compartment.

A rear air leveling system (available with towing package) provides improved handling stability and ride comfort when towing or carrying heavy cargo. The system, which automatically adjusts the air pressure in the suspension bladders, helps maintain a uniform ground clearance and departure angle when towing or when carrying heavy cargo.

# GRAMMAR REVISION

## I. Word - building

### Affixes

Table 1 - Prefixes

Prefix	Parts of speech	Meanings	Examples	Notes
anti-	nouns, adj.	against, opposite to	anti-war anti-missile	corresponds to the Russian prefix анти- and the first part of Ukrainian compound words проти-антивоєнний, протиракетний
co-	nouns, verbs	join, together or mutually	co-existence	corresponds to the Ukrainian prefix с-співіснування
counter-	nouns	opposite	counter-revolutionary	corresponds to the Ukrainian контр-контрреволюційний
de-	verbs, nouns	the reverse of, undo	demilitarization	corresponds to the Ukrainian де- демілітаризація
dis-	verbs, nouns, adj.	not or the reverse of	disconnect disorganize	corresponds to the Ukrainian роз-, дез-, обез-роз'єднувати
en- (em-)	verbs, nouns, adj.	to put into, to surround by	encage, encourage	саджати в клітку заохочувати
ex-	nouns	former	ex-minister	колишній міністр

extra-	adj.	not within the scope of	extraordinary	words with the prefix extra- usually meaning экстра- екстраординарний
in- (il-, im-, -ir)	adj.	not or the reverse of	invisible, illogical, irresistible	corresponds to the Ukrainian prefix не- невидимий, нелогічний, непереборний
inter-	verbs, adj.	1) reciprocal action or relation; 2) between	interlace, international	1) переплітати; 2) міжнародний
mis-	verbs, nouns	bad	misfortune	нещастя
non-	nouns, adj.	the opposite or the reverse of	non-interference	corresponds to the Ukrainian prefix -не невтручання
over-	verbs, adj.	in excess	overact	corresponds to the Ukrainian prefix пере- переграти
post-	adj., nouns, verbs	after, following	postwar	післявоєнний
pre-	verbs, adj., nouns	existing before, dating from	prewar	довоєнний
re-	verbs	anew, again or back	rewrite	corresponds to the Ukrainian prefix пере- переписувати
sub-	nouns,	next, lower	subheading	corresponds to the

	adj., verbs	than		Ukrainian під- підзаголовок
super-	adj., nouns, verbs	1) exceeding; 2) situated over	1) superheat; 2) superprofit	corresponds to the Ukrainian пере- and понад- перегрівати, надприбуток
trans-	verbs, adj.	1) to put into a different state, place; 2) across, beyond, on the other side of	1) transplant; 2) transalpine	corresponds to the Ukrainian пере-, транс- пересаджувати, трансальпійський
ultra-	adj., nouns	exceeding	ultrashort	corresponds to the Ukrainian ультра- ультракороткий
un- <sup>1</sup>	verbs, nouns	contrary to	unbind	corresponds to the Ukrainian роз- розв'язувати, розкривати
un- <sup>2</sup>	adj. (or participles), occasionally nouns	not or the reverse of	unaware, unbearded	corresponds to the Ukrainian не-, без- /бес- незнаючий, безбородий
under-	verbs, adj.	1) insufficiently; 2) beneath	1) undervalue; 2) underline	corresponds to the Ukrainian недо-, під- недооцінювати, підкреслювати

Table 2 - Suffixes

Suffix	Meanings	Examples	Notes
Noun-building suffixes			
-age	result or place of an action; state	1) wreckage; 2) shortage	1) уламки 2) недостача
-ance (-ence)	1) name of an action; 2) state or quality	1) disturbance, reference; 2) ignorance, silence	in the second meaning usually correspond to adjectives ending in -ant (ent)
-ant (-ent)	doer of an action or profession	assistant, correspondent	асистент, кореспондент
-dom	state, condition	boredom, freedom	нудьга, воля
-ee	person — the object of an action	employee, addressee	службовець, адресат
-eer (-ier)	1) profession; 2) person concerned with	1) gondolier; 2) engineer	гондольєр інженер
-er <sup>1</sup> (-or)	1) person - doer of an action (or name of profession); 2) instrument or thing - doer of an action	1) reader, editor; 2) receiver, elevator	1) читач, видавець; 2) одержувач, підйомник
-er <sup>2</sup>	resider or a native of	villager, Londoner, Southerner	сільський житель, лондонець, житель півдня
-ess	female living beings	poetess	поетеса



-hood	state, condition	childhood	ДИТИНСТВО
-ian, (-an, -n)	1) person skilled in some art or science; 2) resident or a native of	1) musician; 2) African	1) музикант; 2) африканець
-ics	names of science	linguistics	ЛІНГВІСТИКА
-ing	process, action	translating, swelling	переклад, розбухання
-ion, (-tion, -ation)	1) process or result of an action; 2) condition	1) education; 2) oppression	1) утворення; 2) гноблення
-ist	the follower or advocate of certain teachings, theories, trends	1) Darwinist; 2) socialist	1) дарвініст; 2) соціаліст
-(i)ty	quality or state	rapidity, legality	1) corresponds to the Ukrainian -ість, -ність: швидкість, легальність; 2) nouns in -i(ty) often correspond to adjectives in (-ible, -al, -ic)
-ment	process state	1) settlement, establishment; 2) embarrassment	corresponds to the Ukrainian -ення: 1) поселення; 2) замішання
-ness	quality or state	softness, weariness	corresponds to the Ukrainian -ість: м'якість,

			втомленість
-ship	state or condition	comradeship, ownership	товариство, власність
Adjective-building suffixes			
-able (-ible)	suitable to do	eatable, responsible	їстівний, відповідальний
-al	connected with	continental, clinical	континентальний, клінічний
-an (-ian, -n)	pertaining to, originated in	Italian, Republican	італієць, республіканець
-ary (-ory)	pertaining to, having the character	revolutionary, contradictory	революційний, суперечний
-ful	full of	beautiful painful	гарний, хворобливий
-ic (-ical)	having the character of, belonging to	historic, classical	героїчний, класичний
-ish	a small degree of somewhat	blackish	чорнуватий
-ive	tending to, able to	creative	творчий
-less	free from, lacking	careless workless	corresponds to the Ukrainian без -: безтурботний, безробітний
-ly	having the qualities of	friendly	дружелюбний
-ous (-ious, -eous)	abounding in	glorious	славний

Adverb-building suffixes			
-fold	multiplied by	two fold	удвічі
-ly	adverbial characteristic	badly	погано
-ward	in direction of	northward, backward	на північ, назад
Verb-building suffixes			
-ate	to give or add	activate, oxygenate	активізувати окисляти
-en	1) to make or become; 2) to impart to, to subject to	1) blacken; 2) heighten, threaten	1) чорнити; 2) піднімати, загрожувати
-i(fy)	to make or become	gasify	газифікувати
-ize	to make or become	1) materialize; 2) summarize	1) матеріалізувати; 2) підсумувати

Exercise 1. Define the way of word-building and point out the meaning of the affixes.

worker, speaker, builder, owner, director, welder, conductor, scientist, pessimist, politician, hardness, dryness, forgiveness, everydayness, out-of-the-wayness, lawless, sea-sick, darkness, wetness, softness, kingdom, earldom, freedom, brotherhood, motherhood, childhood, manhood, movement, settlement, equipment, appointment, education, connection, expression, pondlet, lakelet, cloudlet, spoonful, cupful, roomful; aimless, breathless, hopeless, meaningless, responsible, eatable, reddish, fattish, sweetish, beautiful, thankful, useful, creative, respective; slowly, weakly, softly, twofold, sixfold; mineralize, specialize, generalize, simplify, classify; uncover, unhappy, irresistible, immoral, dislike, disconnect, to outwork, to outcry, to overeat, to overpay, reread, resell, pre-human, post-election.

Exercise 2. Translate the following words into English using stems given and the necessary affixes:

танцюрист (dance)	вдівство (widow)
приймач (receive)	громадянство (citizen)
перекладач (interpret)	горішек (nut)
винищувач (fight)	зубик (tooth)
водолаз (dive)	повний кошик (basket)
безпам'ятність (forget)	повний рот (mouth)
відданість (devoted)	безмісячна ніч (moon)
темрява (dark)	безцінний (price)
доброта (kind)	безрадісний (joy)
батьківство (father)	безформний (shape)
їстівний (eat)	відкрити (lock)

Exercise 3. Make new words from the following ones (home task):

cold - coldly, coldness

soft, weak, happy, sudden, ready, harm, sun, help, care, use, to depend, child, milk.

## II. Tenses

### Active voice

		Simple (факти, що повторюються )	Continuous (тривала, незавершена дія, що відбувається в певний момент часу) to be+Participle I	Perfect (передування даному моменту, завершеність ) to have + Participle II	Perfect Continuous (тривала дія, що почалася в якийсь момент і триває до іншого моменту)
Present	+	I (You, we, they) work; She (he, it) works	I am working She (he, it) is working You (we, they) are working	I (we, you, they) have worked She (he, it) has worked	I have been working She (he, it) has been working
	-	I (You, we, they) do not work; She (he, it) does not work.	I am not working She(he,it) is not working You (we,they) are not working.	I (we,you,they) have not worked. She (he,it) has not worked.	I have not been working. She (he, it) has not been working.
	?	Do I (You, we, they) work? Does She (he, it) work?	Am I working? Is she (he, it) working? Are you (we, they) working?	Have I (we, you, they) worked? Has she (he, it)worked?	Have you been working? Has she (he, it) been working?

Past	+	I worked (для всіх осіб)	I was working She (he, it) was working You,we,they were working	I had worked (для всіх осіб)	I had been working She (he, it) had been working
	-	I did not work (для всіх осіб)	I was not working She (he, it) was not working You,we,they were not working	I had not worked (для всіх осіб)	I had not been working She (he,it) had not been working
	?	Did you work? (для всіх осіб)	Was I working? Was she(he,it) working? Were you (we,they) working?	Had I worked? (для всіх осіб)	Had you been working? Had she (he, it) been working?
Future	+	I will work (для всіх осіб)	I will be working (для всіх осіб)	I will have worked (для всіх осіб)	I will have been working (для всіх осіб)
	-	I will not work (для всіх осіб)	I will not be working (для всіх осіб)	I will not have worked (для всіх осіб)	I will not have been working (для всіх осіб)
	?	Will you work? (для всіх осіб)	Will you be working (для всіх осіб)	will you have worked? (для всіх осіб)	will you have been working (для всіх осіб)

Exercise 1. Translate the following sentences into Ukrainian (Russian) and determine the tense of the Predicate. Put special and general questions to these sentences.

1. An electric motor converts electrical energy into mechanical motion. 2. The process of the restructuring of the railway industry takes place in most European countries. 3. The rolling stock suppliers played a vital role in rolling stock development. 4. The new rail enterprises will include private operators, leasing companies and private sector infrastructure owners. 5. The secondary support comprises the springs and dampers between the car body and the two bogies. 6. Wireless remote control and communication is becoming part of our everyday life. 7. Diesel engines use the heat of compression to ignite the fuel. 8. Cars have not changed a lot since they were invented. 9. Dramatic change is taking place in the automotive industry distribution and retailing. 10. Most engines use either an electrical or a compression heating ignition system.

Exercise 2. Put the verb in brackets into the proper tense (home task):

1. In 1869, George Westinghouse (to patent) an air brake that used compressed air to force the brakeshoes against the wheels. 2. Electric trains (to run) on both direct and alternating current. 3. Recently, Belgian carrier VLM (to cut) its services between London and Brussels. 4. By the end of the 1960s-1970s, most western countries (to completely replace) steam locomotives in passenger service. 5. The LSM (Linear Synchronous Motor) pushes the Maglev vehicles at a constant speed, regardless of whether there are head or tail winds, or the vehicles (to climb) or (to descend) a grade. 6. Maglev has unique advantages over earlier modes of transport and (to radically transform) society and the world economy in the 21st Century. 7. Maglev (to be) a dream since the early 1900s. 8. The steam engine has a “dead” spot at the extreme end of each stroke while the valve (to transit) from power to exhaust. 9. The downside of using steel wheels is that they (not to have) much traction. 10. In the mid-1950s, the numbers of steam locomotives (to grow) rapidly, and today they exist only as sentimental reminders of a bygone era. 11. In 1812, John Blenkinsop (to build) a substantially lighter engine than Trevithick’s. 12. The primary means of transportation (to become) the private automobile, which typically carries only one or two passengers at a time. 13. Alternating current (AC) (to offer) an economical current supply at the

expense of motor complexity.

Passive voice (to be + Participle II)

	Simple (факти, що повторюються, дії)	Continuous (тривала, незавершена дія, що відбувається в певний момент часу)	Perfect (передування даному моменту, завершенність )	Perfect Continuous (тривала дія, що почалася в якийсь момент і триває до іншого моменту)
Present	the engine is examined every year.	the engine is being examined at the moment.	the engine has already been examined.	—
Past	the engine was examined last month.	the engine was being examined at 5.00 yesterday.	the engine had been examined by that time yesterday.	—
Future	the engine will be examined tomorrow.	—	the engine will have been examined by the end of October.	—

Exercise 1. Translate the following sentences into Ukrainian (Russian). Put special and general questions to these sentences.

1. The first locomotives were propelled by steam. 2. Steam locomotives have been replaced by diesel and electric counterparts. 3. The first diesel road-freight unit was tested in 1940. 4. Diesel-electric locomotive units are produced in a number of sizes, with corresponding power. 5. Both diesel-electric and straight electric locomotives can be equipped with dynamic brakes. 6. The modern DC motor was invented in 1873. 7. To make the battery operative, it must be charged,



i.e., an electric current must be passed through it. 8. In the nearest future all trains will be propelled by the magnetic force. 9. The recent rolling stock, especially commuter trains, is mainly composed of stainless steel. 10. More than 300 locomotives will be supplied to Austrian Railways next year.

Exercise 2. Put the verb into the proper tense in Passive Voice (home task):

1. A number of MAGLEV vehicles (to construct) by 1970. 2. If the engineer exceeds permitted speed on a section of line, the brakes (to apply) automatically. 3. The first locomotives used in the United States of America (to import) from England. 4. Now three daily trains per direction (to cut) on the Köln-Frankfurt high-speed line. 5. Sleeping cars (to use) on American railroads since the 1830s. 6. Soon the travelling time on the high-speed line Amsterdam - Brussels (to reduce) to 90 minutes. 7. When your car is driving on the freeway, about 25 percent of the engine's power (to use) to push the tires down the road. 8. At the end of the forward stroke, the steam (to release) from the rear portion of the cylinder. 9. In the 19<sup>th</sup> century train location information (to convey) to engineers by stationary signals such as flags and patterned disks. 10. The project (to finish) by 2011. 11. Diesels (to introduce) by the beginning of the twentieth century. 12. Crewmen for the first diesel locomotive in the United States (to train) to operate it in just 15 minutes.

### III. Modal verbs

Дієслово	Переклад	Приклад	Еквівалент
can (Past: could)	можу, умію, можна	He can ride a motorbike.	be able to (могти, бути в змозі щось робити). He is able to solve this problem himself.
may (Past: might)	можу, маю дозвіл, можна	She may use my telephone.	be allowed to (мати дозвіл). He is allowed to eat whatever he likes.
must	повинен	The gas pressure must be increased.	have to (доводиться за будь яких обставин).

must not	не можна, забороняється	You must not miss classes.	I have to wake up early. be to (повинен за домовленістю, за планом, розкладом). The train is to arrive in 5 min.
should	треба, повинен	You should work harder.	
need (?) need not	потрібно, треба нема чого, не треба	Need I help you? You need not learn this text by heart.	

Exercise 1. Translate the following sentences into Ukrainian (Russian).

1. The locomotive must be able to operate 24 hour a day for different purposes. 2. New technologies and rolling stock will have to play an important role in the development of railways. 3. The auxiliary wire and contact wire were to be replaced. 4. Under extreme conditions, certain types of batteries can explode violently. 5. In all diesel engines, the cooling water temperature should be kept as constant as possible. 6. It is quite clear that, if rail transport is to be viable in the future, one requirement is to reduce vehicle costs. 7. Coach floors should be on the same level as the platform. 8. Service and maintenance (by exchange of modular components) are to be performed within approximately 4 hours. 9. Passenger areas need to be rebuilt during the service life of a coach in order to be kept up-to-date, freshlooking and attractive. 10. It may in some cases be desirable to enable train crews and possibly also passengers to pass between multiple trainsets. 11. As other modular standards might be better, this matter should be subject to further studies. 12. All components and systems of the vehicle can operate faultlessly in a temperature range of -40°C to +35°C.

Exercise 2. Use the correct form of Infinitive after Modal Verbs (home task):

1. The engine may (to drive) a generator to produce electricity to power electric motors. 2. Science must (to originate) in the feeling that something was wrong. 3. Given that the pins had (to put) into place and (to remove) manually while the

cars were moved by a distant engine, coupling cars was a dangerous job. 4. Diesel engines could (to carry) enough fuel for a day or two of continuous operation. 5. Diesels require very little maintenance, and can (to start up) and (to shut down) instantly. 6. Some passenger trains may (to utilize) more than one locomotive and are able (to continue) at reduced speed after the failure of one locomotive. 7. At such speeds, the technology of railroads must (to rethink). 8. Maglev does not burn oil, but instead consumes electricity, which can (to produce) by coal-fired, nuclear, hydro, wind, or solar power plants. 9. Large locomotives can (to substitute) by small locomotives where the grades are steeper and more power is needed. 10. It should (to note) that at this time in history, every part of the engine had (to make) by hand.

#### IV. The Verb to be

##### Forms

Personal Pronoun	Present Indefinite		
	Affirmative	Interrogative	Negative
I	am ('m)	Am I	am not
You	are ('re)	Are you	are not (aren't)
He, she, it	is ('s)	Is he (she, it)	is not (isn't)
We	are ('re)	Are we	are not (aren't)
They	are ('re)	are they	are not (aren't)

Personal Pronoun	Past Indefinite		Future Indefinite	
	Affirmative	Negative	Affirmative	Negative
I	was	was not (wasn't)	shall ('ll) be*	shall not (shan't) be*
You	were	were not (weren't)	will ('ll) be	will not (won't) be
He, she, it	was	was not (wasn't)	will ('ll) be	will not (won't) be

We	were	were not (weren't)	will ('ll) be	will not (won't) be
They	were	were not (weren't)	will ('ll) be	will not (won't) be
* will be is also possible				

### Functions

Function	Example
1. Змістовне дієслово	I am at the plant now.
2. Допоміжне дієслово	
1) утворює часи групи Continuous (to be + Participle I). 2) утворює пасивний стан (to be + Participle II).	What are you doing now? I am testing the new engine. The engine is tested by the engineers.
3. Дієслово зв'язку	He is a welder.
4. Модальне дієслово (to be + Infinitive)	He was to increase the output.

Exercise. Translate the following sentences into Ukrainian (Russian). Determine the function of the verb to be.

1. Transport is a key factor in modern economies. 2. The rail supply industry is preparing itself to work in a highly competitive market without national boundaries. 3. High speed lines are replacing short flights (under 500km). 4. More than 300 locomotives of the Rh 1116 type will be supplied to Austrian Railways next year, and a high proportion of them have already been completed. 5. Weight is to become a critical factor in the development of automotive vehicles. 6. Fuel is fed to the fire box of the heater boiler from tank by gravity. 7. The purpose of the engine lubrication system is to supply oil continuously to the rubbing engine parts. 8. Before starting the engine, make sure that the gear shift lever is in neutral. 9. Railway tracks should be crossed in low gear and where permitted only. 10. When the piston is at the bottom of its stroke the exhaust valve begins to open.

## V. The Verb to have\*

Функції	Приклади
1. Значеннєве дієслово.	The plant has a huge profit.
2. Допоміжне дієслово для утворення часів групи Perfect (have + Participle II).	We have received a lot of letters from our consumers.
3. Модальне дієслово (to have + Infinitive): повинен, змушений.	He had to work overtime in order to buy a new car.

\*3 особа однина (she, he, it), теперішній час – has; минулий час для всіх осіб – had.

Exercise. Translate the following sentences into Russian (Ukrainian). Determine the function of the verb to have.

1. Experts will have to investigate fuel flow, air consumption and exhaust gas composition. They may have to study both two-strokes and four-strokes engines to compare diesel and petrol ones. 2. Effects of variation of ambient conditions upon performance of ICE has been studied by investigators. 3. Diesel powered locomotives had become established before the gas turbine in suitable form came upon the railway scene. 4. Since the early 1920s there has been intensive research into characteristics of oil fuels and designs of combustion chambers to meet the variables which occur in both fuels and operating conditions. 5. Fuel characteristics have a big effect on engine service life and maintenance cost. 6. Dual-fuel engines have been operating for some considerable time on natural gas, sewage gas and industrial process gas. 7. Fins are variously shaped according to the requirements they have to fulfill and first of all for removal heat from the outer cylinder surface. 8. In modern fast-running diesel engines light alloys have come into picture for pistons in order to cut down inertia in high-speed engine designs. 9. Several difficulties have to be solved in the design of compression-ignition engines. 10. When replacing any components during engine repairs, particular care has to be taken to fit their matching weight. 11. For many purposes diesel engines have considerable advantage, particularly in the field of fuel consumption searing.

## VI. Degrees of comparison

Прикметники й прислівники	звичайний ступень	вищий ступень	найвищий ступень
1. Односкладові й деякі двоскладові	big clever easy	bigger cleverer easier	the biggest the cleverest the easiest
2. Багатоскладові	comfortable	more comfortable	the most comfortable
3. Ті, які утворюють ступені порівняння від різних основ	good (гарний) well (добре)  bad (поганий) badly (погано)  much } багато many  little { маленький { мало	better { кращий { краще  worse { гірший { гірше  more більше  less { менший { менше	the best найкращий, найкраще  the worst найгірший, гірше за все  the most найбільше, найбільший  the least найменший, найменше

Exercise. Translate the following sentences into Ukrainian (Russian).

1. The compartment sections should be as long as possible. 2. Railway systems have advantages in terms of punctuality and handling mass transport; at the same time, they consume less energy than airplanes and passenger cars. 3. All brakes must operate correctly to keep the braking distance as short as possible. 4. Aluminum is more expensive than stainless steel. 5. The trucks are the heaviest things on the train - each one weighs 37,000 pounds (16,783 kg). 6. The engine

itself is more powerful than the engine in almost any semi-truck. 7. Ships and railways are the cleanest transport systems. 8. Trains are not so fast as planes. 9. The faster the train, the better it must be looked after. 10. Throughout the world today, railway systems are being expected to play more important transport roles and to develop further. 11. The entire European rail industry must become much more competitive across the whole spectrum of activities in which it is involved. 12. The higher the temperature of the engine, the greater the amount of oil filling the fluid coupling and the higher the speed of the blower rotor.

## VII. Non finite Parts of Speech

### Infinitive

	Active	Passive
Indefinite	to ask (дія, одночасна з дією дієслова)	to be asked
Perfect	to have asked (дія, що передує дії дієслова)	to have been asked
Continuous	to be asking (дія, що розглядається в процесі її здійснення)	—
Perfect Continuous	to have been asking (дія, що почалася в минулому та все ще триває)	—

Exercise 1. Translate the following sentences into Ukrainian (Russian). Determine the function of the Infinitive.

1. To lock the differential, it is sufficient to connect rigidly one of the differential side gears to the differential case. 2. A larger motor takes a long time to get up speed owing to its inertia. 3. In our experiment we were to compare the two gases. 4. New kinds of cheap fuel are to be found. 5. The problem to consider next is concerned with the transmission system. 6. Richard Trevithick was the first to

build the first successful locomotive. 7. To begin with, one must take precautions while working with the electrolyte. 8. It is to be noted that the most successful rotary engine is the Wankel engine. 9. The first person to experiment with an internal-combustion engine was the Dutch physicist Christian Huygens. 10. It has become possible to use the alternative means of energy.

Exercise 2. Determine the function of the Infinitive (home task).

1. It is common to classify locomotives by their source of energy. 2. A proposed alternative is to recharge the flywheel from external electric motors installed at station stops. 3. To move a string of cars, the locomotive drive wheels must grip the track. 4. In 1869, George Westinghouse patented an air brake that used compressed air to force the brakeshoes against the wheels. 5. The basic idea was to burn some kind of fuel to produce either steam or hot combustion gases, which were then passed through a turbine, which would spin at high speed. 6. This was the first steam engine powered locomotive to run on a railroad and it was the most successful working steam engine that had ever been constructed up to this period. 7. The TGV project started in the 1960s when SNCF realised that if it was to compete against the ever growing automobile and air transport it had to offer seriously better speeds. 8. One solution was to have two TGV sets coupled together, and this is now the norm for TGV. 9. There are long term plans to upgrade trains and track so that in the 21<sup>st</sup> century some trains will be able to run as fast as 360km/h. 10. The engine may drive a generator to produce electricity to power electric motors that turn the wheels. 11. In fact, a train is about the most efficient way to move heavy goods.

### VIII. Gerund

	Active	Passive
Indefinite	asking I hate asking people for help	being asked I insist on your being asked for help
Perfect	having asked I know of his having asked for help	having been asked I knew of his having been asked for help



Exercise 1. Find Gerund in the given sentences and translate them into Ukrainian (Russian).

1. Valves prevent gases from reaching high pressures. 2. Scientists and engineers succeeded in making some new models of locomotives. 3. Before starting engine of locomotive make sure that all necessary switches are on. 4. Cooling of all diesel engines should be constant and uniform. 5. Reducing vehicle cost is a main purpose of rail transport in the future. 6. Servicing of locomotives and rolling stock is to be carried out regularly. 7. At discussing the speed of rail transport first of all engineers have to take into consideration safety measures. 8. One must have devices for measuring vibration of carriages at motion. 9. Besides being capable of producing more reliable motion, an automatic control can increase safety and eliminate human factor. 10. Without being subjected to a thorough tests locomotive components cannot be produced and installed. 11. After having been tested at special trials it was decided to launch the production of this electric locomotive model. 12. The new method could be used with great advantage without locomotive diesel being overheated.

Exercise 2. Translate into your native language paying attention to different functions of Gerund (home task):

1. Stephenson and William Losh, who owned an ironworks in Newcastle, patented a method of making cast iron rails. 2. More than a century after being constructed, many bridges and long tunnels remain in use, essentially unchanged. 3. Before the middle of the 20th century, electric and diesel-electric locomotives began replacing steam locomotives. 4. A turbine of a given power output is smaller than an equally powerful piston engine, allowing a locomotive to be very powerful without being excessively large. 5. Many observers saw MAGLEV vehicles as a way of solving a number of problems confronting the United States and other developed nations. 6. Using a low-pressure tunnel will make it possible to get from Los Angeles to New York in 1 hour. 7. Japan has spent more than \$2 billion in developing its Maglev system. 8. In the 1960s and early 1970s, considerable interest developed in the possibility of building tracked passenger vehicles that could travel much faster than conventional trains. 9. At the same time, the valve slide begins admitting high pressure steam to the back end of the

cylinder. 10. Since a train weighs thousands of times more than a car, the rolling resistance is a huge factor in determining how much force it takes to pull the train. 11. By using steel wheels on a steel track, the amount of deformation is minimized. 12. An interlocking signal was designed to prevent signalmen from setting signals and switches in conflict with one another. 13. The sight of steam at speed in old trains is what makes them worth preserving. 14. The steel rail was more durable, capable of supporting harder wheels and heavier loads.

## IX. Participle

	Participle I	Participle II
Active		
Indefinite	<p>що запрошує inviting    що запрошував                  запрошуючи</p> <p>що робить making { що робив                  роблячи</p>	<p>запрошуваний invited { запрошений</p> <p>той, що робиться made { зроблений</p>
Perfect	<p>having invited    запросивши having made      зробивши</p>	
Passive		
Indefinite	<p>being invited    запрошуваний being made    той, що робиться</p>	
Perfect	<p>having been invited    будучи запрошеним (після того, як запросили; тому що запросили); having been made    будучи зробленим (після того, як зробили; тому що зробили).</p>	

Exercise 1. Find Participle in the given sentences and translate them into Ukrainian (Russian).

1. Diesel engines using the heat of compression are more economical than spark-ignition ones. 2. An electrical or a compression heating ignition system applied by most engines is spread greatly now. 3. The railway industry is being restructured permanently in many European countries. 4. Being more economic, electric locomotives have substituted completely steam ones. 5. Experimental locomotive having been done, test runs began. 6. Using a completely separate engine and generator for air conditioners, lights and kitchen facilities, train keeps passengers comfortable. 7. A train starting from a station and gradually gaining speed undoubtedly has a variable speed. 8. Having been carefully tested this electric locomotive was put into operation. 9. Developed by qualified engineers the new traction motor provides more power to the wheels. 10. With the experiments having been carried out, specialists started to produce new elements for locomotive braking system. 11. While experimenting designers burned fuel of various classes for the new diesel. 12. The demand for high-power locomotive may be satisfied either with single or twin-engined drives, the single being easier to maintain and requiring less space.

Exercise 2. Open the brackets using the proper form of the Participle (home task):

1. (to take) different way of laying track, American engineers had to develop more sophisticated locomotives. 2. (to introduce) early in the twentieth century, diesels offered unprecedented efficiency and performance over steam locomotives. 3. Diesel engines are internal combustion engines with fuel (to inject) directly into the cylinder head. 4. Though (to be) successful, turbine-electric locomotives had high maintenance costs, and used almost as much fuel at idle as they did at full throttle. 5. (to run) the diesel switchers for a while, they started to notice the economics of these engines. 6. Three daily trains per direction are being cut on the Köln-Frankfurt high-speed line, 49 trains (to be) currently in each direction per day. 7. The name "Train à Grande Vitesse" – TGV - (to translate) into English means high speed train. 8. Today most locomotives are diesel or electric, diesel locomotives (to have) a powerful diesel engine, and electric locomotives (to draw) their power from either an overhead cable or a third rail alongside the ordinary track. 9. Stephenson began to work nights (to repair)

shoes, clocks, and watches, making extra money that he would spend on his inventing projects. 10. Diesel locomotives have a powerful diesel engine (to burn) oil. 11. Steam locomotive uses different types of fuel (usually coal, sometimes wood) (to burn) in a furnace. 12. Modern diesels are high tech wonders, (to employ) such features as ground radar to determine speed, (to feed) this information to computers that prevent the locomotive's wheels from slipping under heavy loads. 13. (to rebuild) and (to repaint), Locomotive No. 1 was given to the Museum of Science and History in 1884.

## X. Sequence of Tenses

Головне речення (присудок у минулому часі)	Підрядне речення	Час дії в підрядному реченні
I knew that	she worked hard працює } she was working hard	співпадає з ГОЛОВНИМ
	she had worked hard } працював she had been working hard	передуює ГОЛОВНОМУ
	she would work hard } буде працювати she would be working hard	ВІДНОСИТЬСЯ ДО МАЙБУТНЬОГО

Exercise 1. Translate the following sentences into Ukrainian (Russian). Use the proper verb forms if it is necessary.

1. It was noted that the controls of diesel and petrol engines were similar in construction. 2. If the engineer exceeds permitted speed on a section of line, the brakes (to be) automatically applied. 3. If an external force (to lift) the vehicle away from the guideway, the levitation force decreases, and the vehicle drops

back towards its equilibrium suspension height. 4. The chief of electric locomotive plant announced that his plant would produce a new type of electric locomotive. 5. If the proposed maglev vehicle successfully completed testing, the test track (to be extended) in each direction to Tokyo and Osaka. 6. If traction was insufficient, the wheels simply (to spin) without pulling the train forward. 7. If ultrafast trains (to be implemented) wider, it would have helped to solve many transportation problems. 8. Experts stated that most troubles in modern locomotive engines had arisen from high temperatures, resulting from poor ventilation. 9. Engineers reported that the electric locomotive they were testing that time was much more economical than the previous model. 10. If the power supply (to fail), onboard batteries which are powered during the journey would provide power to levitate the vehicle. 11. If the railroad tracks were less reliable, trains (to derail) very often. 12. If necessity arises, the rails (to change) in a single day.

Exercise 2. Translate the following sentences into English (home task):

1. Разработчики сообщили, что новые динамические тормоза будут испытаны в следующем году.

2. Испытательные пробеги подтвердили, что новый локомотив обладает высокими скоростными характеристиками.

3. Руководитель конструкторского бюро заявил, что работа по созданию новой тормозной системы уже завершена.

4. Специалисты пришли к выводу, что дистанционное управление и связь становятся важным фактором в управлении электроприводами.

5. Было отмечено, что целью системы смазки двигателя является непрерывная подача масла к трущимся узлам двигателя.

## Appendix 1

### The Fractional Numerals

Common Fractions	Decimal Fractions
$\frac{1}{2}$ a (one) half $\frac{1}{3}$ a (one) third $\frac{2}{3}$ two thirds $\frac{1}{4}$ a (one) quarter, a (one) fourth	0.1 nought point one 0.01 nought point nought one 2.35 two point three five 32. 305 three two (thirty-two) point three nought five
$\frac{3}{4}$ three quarters, three fourths $\frac{1}{5}$ a (one) fifth $\frac{2}{5}$ two fifths $1\frac{1}{2}$ one and a half	

## Appendix 2

### Metric system of measures

Unit	Abbreviation	Russian equivalent	Metric equivalent
mile	mi	миля	1, 609 км
rod	rd	рід	5, 029 м
yard	yd	ярд	0, 914 м
foot	ft	фут	30, 480 см
inch	in	дюйм	2, 540 см
square mile	sq mi or mi	кв. миля	2, 590 км <sup>2</sup>
acre	a or ac	акр	0, 405 га, 4047 м <sup>2</sup>
square rod	sq rd or rd <sup>2</sup>	кв. рід	25, 291 м <sup>2</sup>
square yard	sq yd or yd <sup>2</sup>	кв. ярд	0, 836 м <sup>2</sup>
square foot	sq ft or ft <sup>2</sup>	кв. фут	0, 093 м <sup>2</sup>
pound	lb	фунт	0, 454 кг
ounce	oz	унція	28, 349 м
dram	dr	драхма	1, 771 м
grain	gr	гран	0, 0648 м
bushel	bu	бушель	0, 036 м <sup>3</sup>

## Продовження таблиці

peck	pk	пік	0, 009 м <sup>3</sup>
gallon	gal	галон	4. 546 л
quart	qt	кварта	1, 136 л
pint	pt	пінта	568, 26 см <sup>3</sup>
gill	gi	джилл	142, 066 см <sup>3</sup>
fluidounce	fl oz	рідка унція	28, 416 см <sup>3</sup>
fluidram	fl dr	рідка драхма	3, 5516 см <sup>3</sup>
minim	min	мінімум	0, 059194 см <sup>3</sup>

## Appendix 3

## Abbreviations

ABC, air-blast cooled	с повітряним охолодженням
abs, absolute	чистий
AF, acid-fast	кислототривкий
AFB, antifriction bearing	антифрикційний підшипник
a.g., air gap	повітряний зазор
AIC, aluminium casting	алюмінієве лиття
amp, ampere	ампер
amt, amount	кількість
AN, above-named	вищезгаданий
approx. approximately	приблизно
aq, aqua	вода
aq. sol., aqueous solution	водяний розчин
assy, assembly	зборка, монтаж
auxy, auxiliary	допоміжний
bb, ball-bearing	шарикопідшипник
B.D.C., bottom dead centre	нижня мертва точка
Bg, broad-gauge	ширококоліїний
bkg, breakage	поломка
bp, boil pressure	тиск у котлі
BW, body weight	вага тіла

## Продовження таблиці

CI, compression-ignition engine	дизель
ckw, clockwise	за годинниковою стрілкою
CP, chemically pure	хімічно чистий
CR, compression ratio	ступінь стиску
CS, crank-shaft	колінчатий вал
CTC, central traffic control	центральне управління руху транспортом
cy, capacity	ємність
D.C. (d.c), direct current	постійний струм
dd, direct drive	пряма передача
dg, double gear	подвійна зубчаста передача
DO, diesel oil	дизельне паливо
d wh, driving wheel	ведуче колесо
eps, electrical power storage	акумулявання електричної енергії
ETA, estimated time of arrival	розрахунковий час прибуття
ETD, estimated time of departure	розрахунковий час відправлення
fl. pr., flameproof	вогнестійкий
ft, foot	фут
FWD, four wheel drive	передача до чотирьох ведучих коліс
gal, gallon	галон
ge, gasoline engine	бензиновий двигун
h.c., heat of combustion	тепловий ефект згорання
hp, horse power	кінська сила
in, inch	дюйм
ICE, internal combustion engine	двигун внутрішнього згорання
J, joule	джоуль
ke, kinetic energy	кінетична енергія
kg, kilogram	кілограм
km, kilometre	кілометр
lfc, low-frequency current	струм низької частоти
ltc, low tension current	струм низької напруги



## Продовження таблиці

m.p.h., miles per hour	миль за годину
O.F., oil fuel	рідке паливо
o.h.v., overhead valve	підвісний клапан
oz, ounce	унція
P.A., power amplifier	підсилювач потужності
ph, per hour	у годину
pr, pressure	тиск
p.s.v., public service vehicle	транспортний засіб загального користування
QB, quick break	швидке розмикання
r.b., roller bearing	роликовий підшипник
rd, road	дорога, шлях
RHD, right-hand drive	правобічне керування
rpm, revolutions per minute	оборотів за хвилину
rwy, railway	залізниця
sd, sound	звук
sec, second	секунда
shp, shaft horse-power	потужність на валу
SI, service inspection	технічний огляд
SP, self-propelled	самохідний
sp. gr., specific gravity	питома вага
STS, special treatment steel	сталь спеціальної обробки
SV, safety valve	запобіжний клапан
sw, specific weight	питома вага
SWA, single wire armored	броньоване одножильне проведення
sync, synchronization	синхронізація
TA, track adjuster	натяжний механізм гусениці
TC, trip coil	катушка, що виключає
TE, thermal efficiency	тепловий коефіцієнт корисної дії
TJ, turbojet	турбореактивний
TU, thermal unit	теплова одиниця. калорія
t.d.c., top dead centre	верхня мертва точка
XH, extra heavy	надважкий

## Словарь

## Словник

accelerate, v	ускорять, разгонять/ двигатель	прискорювати, розігнати / двигун
accelerator, n	ускоритель, акселератор, дроссельная заслонка	акселератор, дросельна заслінка
acceleration, n	ускорение	прискорення
admission, n	впуск, допуск	впуск, допуск
admission chamber	камера впуска	камера впуску
admission of air	впуск воздуха	впуск повітря
admission port	впускное окно	впускне вікно
admission stroke	такт впуска	такт впуску
adjustment, n	регулировка	регулювання
air cleaner, n	воздухоочиститель, воздушный фильтр	повітря очисник, повітряний фільтр
automize, v	распылять	розсіювання, розпилувати
automized particles	распыленные частицы	розсіянні частки, розпилені частки
bearing, n	подшипник, цапфа, опора, опорная плоскость (поверхность)	підшипник, цапфа, опора, опорна площина
blow, v	дуть	дути
blow out, v	продувать, спускать	продувати, спускати
blow out, n	обдувка, продувка, разрыв, прокол (шины)	обдування, продування, розрив, прокол (шини)
blower, n	воздуходувка, вентилятор	повітродувка, вентилятор
burn, n	горение, сгорание	горіння, згорання
burn, v	гореть, сгорать	горіти, згорати
burning, n	горение, сгорание	горіння, згорання

## Продовження таблиці

burning mixture	горючая смесь	запальна суміш
burning gases	выхлопные газы	вихлопні гази
burner, n	горелка, форсунка, камера сгорания	пальник, форсунка, камера згорання
cam, n	кулак, выступ, зуб	кулак, виступ, зуб
camshaft	кулачковый вал, распределительный вал	кулачковий вал, розподільний вал
chamber, n	камера	камера
combustion chamber	камера сгорания	камера згорання
diffuser chamber	смесительная камера, рабочая камера нагнетателя	змішувальна камера, робоча камера нагнітача
float chamber	поплавковая камера (карбюратора)	поплавцева камера (карбюратора)
charge, n	свежий заряд (горючей смеси или воздуха)	свіжий заряд запальної суміші або повітря
coil, n	катушка	катушка
spark coil	индукционная катушка, искровая катушка	індукційна катушка, іскрова катушка
coil pipe	змеевик	змійовик
combustion, n	сгорание, горение, сжигание, воспламенение	згорання, горіння, спалення, запалення
internal combustion	внутреннее сгорание	внутрішнє згорання
internal combustion engine	двигатель внутреннего сгорания	двигун внутрішнього згорання
external combustion	внешнее сгорание	зовнішнє згорання

## Продовження таблиці

combustion chamber	камера сгорания	камера згоряння
combustion gases	продукты сгорания	продукти згоряння
combustion pressure	давление при сгорании	тиск при згорянні
complete combustion	полное сгорание	повне згоряння
complete revolution	полный оборот	повний оберт
complete discharge	полная разгрузка	повне розвантаження
compress, v	сжимать, сдавливать	стискувати (стискати)
compressed air	сжатый воздух	стиснуте повітря
compression, n	сжатие, сдавливание, компрессия	стиснення, здавлювання, компресія
compression ignition	воспламенение от сжатия	запалення від стискання
compression ignition engine	двигатель с воспламенением от сжатия, дизель	двигун із запаленням від стискання, дизель
compression stroke	такт сжатия	такт стискання
consumption, n	потребление, расход, затрата	споживання, витрати
convert, v	превращать	перетворювати
crank, n	кривошип	корба (кривошип)
crankshaft, n	коленчатый вал	колінчастий вал
crankcase, n	картер (двигателе)	картер (двигун)
cycle, n	цикл, период, такт	цикл, період, такт

## Продовження таблиці

fourstroke cycle	четырёхтактный цикл	чотиритактний цикл
cylinder, n	цилиндр, баллон	циліндр, балон
air cylinder	цилиндры отлитые в одном блоке, воздушный цилиндр	циліндри відлиті в одному блоці, повітряний циліндр
block-cast cylinders	цилиндры, отлитые в одном блоке	циліндри відлиті в одному блоці
cylinder volume	объем цилиндра	об'єм циліндра
cylinder wall	стенка цилиндра	стінка циліндра
delivery port	впускное окно	впускне вікно
delivery pump	нагнетающий насос	нагнітаючий насос (всмоктувач)
descend, v	спускаться, снижаться	спускатися, знижуватися
descent, n	спуск, скат, склон	спуск, спад, схил
detonation, n	детонация, вспышка, взрыв	детонація, спалах, вибух
diffuser, n	диффузор, распылитель	дифузор, розпилювач
diffuser chamber	смесительная камера, рабочая камера нагнетателя	змішувальна камера, робоча камера нагнітача
efficiency, n	коэффициент полезного действия (КПД)	коефіцієнт корисної дії (ККД)
engine, n	двигатель, машина	двигун, машина
compression ignition e.	двигатель с зажиганием от сжатия (топливной смеси) дизель	двигун із запалюванням від стискання (паливної суміші), дизель
gasoline e.	бензиновый двигатель	бензиновий двигун
high compression gas e.	газовый двигатель с высокой степенью сжатия	газовий двигун з високим ступінем стискання
two cycle e.	двухтактный двигатель	двотактний двигун

Продовження таблиці

spark ignition e.	двигатель с зажиганием искрой	двигун із запалюванням іскрою
diesel e.	дизельный двигатель	дизельний двигун
evacuate, v	выкачивать воздух, создавать вакуум, разреженное пространство	висмоктувати повітря, створювати вакуум, розріджений простір
expand, v	расширяться, увеличиваться в объеме	розширюватися, збільшуватися в обсязі (в об'ємі)
expansion, n	расширение, растягивание	розширення, розтягування
expansion stroke	такт расширения, рабочий ход	такт розширення, робочий хід
fan, n	вентилятор	вентилятор, вітрогон
fasten, v	соединять, скреплять, прикрепляют	з'єднувати, скріплювати, прикріплювати
fastening, n	крепление	кріплення
filter, n	фильтр	фільтр
coarse oil filter	фильтр глубокой очистки масла	фільтр глибокої очистки мастила
fine oil filter	фильтр тонкой очистки масла	фільтр тонкої очистки мастила
fix, v	устанавливать неподвижно, фиксировать	встановлювати нерухомо, фіксувати
float, n	поплавок	поплавець
float, n	поплавковый, плавающий	поплавцевий, плаваючий
float chamber	поплавковая камера (карбюратор)	поплавцева камера (карбюратор)
flywheel, n	маховик	моховик
fuel, n	топливо	паливо
fuel injector	топливный инжектор	паливний інжектор

## Продовження таблиці

fuel- injection pump	насос инжектора	насос (всмоктувач) інжектору
gasoline, n	бензин, газолін	бензин, газолін
gasoline engine	бензиновый двигатель	бензиновий двигун
gear oil pump	шестеренчатый масляный насос	шестеренчастий мастильний насос (висмоктувач)
govern, v	регулировать, управлять	регулювати, управляти
governing, n	регулирование, управление	регулювання, управління
governor, n	регулятор (оборотов), регулирующий клапан	регулятор (обертів), регулюючий клапан
heat exchanger	теплообменник	теплообмінник
heat control	регулирование тепла (температуры)	регулювання тепла (температури)
heat control valve	клапан регулирования теплового состояния (двигателя)	клапан регулювання теплового стану (двигуна)
heat efficiency	тепловой КПД	тепловий ККД
homogeneous mixture, n	однородная смесь	однорідна суміш
ignite, v	зажигать, раскалять, загораться, воспламеняться	запалювати, розпикати, загорятися, спалахувати
ignition, n	зажигание, вспышка, загорание, воспламенение	запалювання, спалах, загорання, запалення
automatic i.	зажигание с автоматическим опережением	запалювання з автоматичним випередженням
compassion i.	воспламенение от сжатия	запалення від стискання

## Продовження таблиці

ignition plug	запальная свеча	запальна свіча
ignition spark	искра зажигания	іскра запалювання
ignition timer	распределитель зажигания	розподільник запалювання
inject v	впрыскивать, вводить, вдуть	в(у)порскувати, вводити, вдувати
injection, n	впрыск, впрыскивание, вдувание	у(в)порскування, у(в)порскування, вдування
injection oil engine	двигатель с воспламенением от сжатия, дизель	двигун із запалюванням від стискання, дизель
inlet, n	вход, впуск	вхід, впуск
inlet valve	впускной клапан	впускний клапан
intake, n	впуск	впуск
intake stroke	такт впуска	такт впускання
liquid fuel	жидкое топливо	рідке паливо
lubricate, v	смазывать	змащувати
lubrication, n	смазывание, смазка	змащування
magneto, n	магнето	магнето
mix, v	смешивать	змішувати
mixture, n	смесь	суміш
combustible gaseous m.	газообразная горючая смесь	газоподібна запальна суміш
mixture distribution	распределение смеси (по цилиндрам)	розподіл суміші (за циліндрами)
mixture ratio	состав смеси	склад суміші
nozzle, n	сопло, форсунка	сопло, форсунка
spray nozzle, n	распылитель	розпилювач
oil, n	смазочное масло, нефть	змащувальне мастило, нафта
v	смазывать	змащувати



## Продовження таблиці

pin, n	(поршневой) палец, цапфа, шип, шейка (вала), стержень, ось	(поршневий) палець, чопа, цапфа, шийка (вала), стрижень, вісь
pipe, n	труба, трубка	труба, трубка
coil pipe	змеевик	змійовик
piston, n	поршень, клапан, плунжер	поршень (толок), клапан, плунжер
accelerating carburettor p.	поршень насоса – ускорителя в карбюраторе	поршень помпи – прискорювачу в карбюраторі
air p.	поршень пневматического цилиндра	поршень пневматичного циліндру
air-cell p.	поршень с воздушной камерой	поршень з повітряною камерою
brake p.	поршень тормозного цилиндра	поршень гальмівного циліндру
horse power	лошадиная сила	кінська сила
power cylinder	цилиндр усилителя	циліндр підсилювач
power plant	силовая установка, силовой агрегат	силова установка, силовий агрегат
power train	система передачи мощности	система передачі потужності
power take-off shaft (p.t.o. shaft)	вал отбора мощности	вал відбору потужності
pressure blower	компрессор, воздуходувка	компресор, повітрядувка
pulley, n	шкив, блок, ворота	шків, блок, брама
delivery pump	нагнетающий насос	нагнітаюча помпа

## Продовження таблиці

centrifugal pump	центробежный насос	відцентрова помпа
oil pump	масляный насос	мастильна помпа
scavenging pump	продувочный насос	продувна помпа
compression ratio	степень сжатия	ступінь стискання
revolve, v	вращаться, поворачиваться	обертатися, повертатися
revolution, n	оборот, вращение	оберт, обертання
revolutions per minute (r.p.m.)	обороты в минуту	оберти за хвилину
connecting rod, n	шатун	шатун (гонок)
scavenging, n	продувка (цилиндров двигателя); очистка, выхлоп, выпуск, слив, отсасывание	продувка (циліндрів двигуна), очистка, вихлоп, випуск, злив, відсмоктування
scavenging air	воздух для продувки	повітря для продувки
scavenging engine	(двухтактный) двигатель с продувкой	(двотактный) двигун з продувкою
scavenging period	продолжительность (продувки), период продувки	тривалість (продувки), період продувки
scavenging stroke	ход выталкивания, ход выпуска газов	хід виштовхування, хід випуску газів
shaft, n	вал, стержень, ось, шпиндель	вал, стрижень, вісь, шпиндель
camshaft	распределительный вал, кулачковый вал	розподільчий вал, кулачковий вал
crankshaft	вал коленчатый	вал колінчастий

## Продовження таблиці

power take – off shaft (p.t.o. shaft)	вал отбора мощности	вал відбору потужності
spark, n	искра, вспышка	іскра, спалах
spark plug	свеча зажигания	запальна свіча
spark coil	катушка зажигания, индукционная катушка	котушка запалювання, індукційна котушка
spent gases	отработанные газы	відпрацьовані газы
spreader, n	расширитель	розширювач
squeeze, v	сдавливать, сжимать, обжимать, давить	стискати (здавлювати), обтискати, давити (чавити)
stroke, n	ход, рабочий ход, ход поршня, длина хода поршня, удар, толчок	хід, робочий хід, хід поршня, довжина ходу поршня, удар, поштовх
compression s.	ход, такт, сжатие	хід, такт, стискання
exhaust s.	такт выхлопа	вихлопний такт
intake s.	такт впуска	впускний такт
inward s.	ход вверх, такт расширения	хід нагору, такт розширення
outward s.	ход вниз, такт сжатия	хід униз, такт стискання
piston s.	ход поршня	хід поршня
power s.	рабочий ход поршня	робочий хід поршня
suction s.	ход всасывания	хід всмоктування
stroke-bore ratio	отношение длины хода поршня к диаметру цилиндра	відношення довжини ходу поршня до діаметру циліндра
stroke capacity	рабочий объем цилиндра	робочий об'єм циліндра
succession, n	последовательность	послідовність
suction, n	всасывание	всмоктування
supercharger	нагнетатель	нагнітач

## Продовження таблиці

throttle, n	дроссель, дроссельная заслонка	дросель, дросельна заслінка
top center	верхняя мертвая точка	верхня мертва точка
torque, n	крутящий момент	обертальний момент
transmit, v	колея, путь, звено гусеничной цепи, гусеница	колія, ланка гусеничного ланцюга, гусениця
valve, n	клапан	клапан
adjustable v.	регулируемый клапан	регулювальний клапан
admission v.	впускной клапан	
inlet v.	впускной клапан	впускний клапан
air v.	воздушный клапан	повітряний клапан
air escape v.	перепускной клапан	клапан випуску повітря
exhaust v.	выхлопной клапан	вихлопний клапан
air release v.	клапан для выпуска воздуха	клапан для випуску повітря
air suction v.	клапан всасывания воздуха	клапан всмоктування повітря
volume, n	объем, емкость	об'єм, ємність