МИНИСТЕРСТВО ТРАНСПОРТА РОССИЙСКОЙ ФЕДЕРАЦИИ

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ

УЛЬЯНОВСКОЕ ВЫСШЕЕ АВИАЦИОННОЕ УЧИЛИЩЕ ГРАЖДАНСКОЙ АВИАЦИИ (ИНСТИТУТ)

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AVIATION ENGLISH GRAMMAR

Учебное пособие

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Содержит в краткой форме грамматические явления, встречающиеся в авиационном регистре английского языка, а также упражнения с использованием материала данных явлений. Приложение включает ключи к упражнениям. Пособие является частью учебно-методического комплекса по обучению авиационному английскому языку.

Разработано в соответствии с государственным общеобразовательным стандартом Российской Федерации и программой обучения студентов высших и средних летных училищ.

Предназначено для практических занятий с курсантами специализаций 240701 – Летная эксплуатация воздушных судов, 240801 – Управление воздушным движением по дисциплине «Профессионально ориентированный английский язык». Также может быть использовано преподавателями авиационных УТЦ и пилотами авиакомпаний.

Печатается по решению Редсовета училища.

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ПРЕДИСЛОВИЕ

Учебное пособие «Грамматика авиационного английского языка» представляет собой грамматический справочник, созданный на кафедре иностранных языков Ульяновского высшего авиационного училища гражданской авиации (УВАУ ГА) и является составной частью учебно-методического комплекса «Авиационный английский язык».

Пособие предназначено для курсантов высших и средних авиационных училищ, достигших уровня Pre-Intermediate/Intermediate в области общего английского языка и начинающих изучение дисциплины «Профессионально ориентированный английский язык».

Учебный материал, рассчитанный на 112 часов практических занятий, характеризуется достаточно высоким уровнем сложности, соответствующим требованиям, предъявляемым к языковой подготовке будущих авиаспециалистов.

Предлагаемое учебное пособие содержит упражнения по основным темам грамматики английского языка, используемым при обучении чтению профессионально-окрашенных текстов: существительное, артикль, прилагательное, употребление настоящего, прошедшего и будущего времен, неличные формы глагола, модальные глаголы и их эквиваленты, страдательный залог, определительные придаточные предложения и причастные обороты.

Структура пособия выдержана в строгой логической последовательности: грамматическая тема и система упражнений, направленных на усвоение грамматического материала на базе лексики авиационного английского языка в соответствии с тематикой учебного пособия «Авиационный английский язык» и нацеленных на достижение максимального количества повторных обращений к предлагаемой грамматической теме

и соответствующему базовому глоссарию. После каждого раздела даны небольшие тесты для контроля усвоения грамматического материала. Приложения содержат ключи к упражнениям для самоконтроля и ключи к тестам. Упражнения для самостоятельной работы отмечены *.

Пособие можно использовать для самостоятельных занятий с целью закрепления знаний и выработки навыков употребления правильных грамматических конструкций английского языка.

Unit I

NOUNS

REMEMBER

A. *Singular and plural*

- To make a singular noun plural, add **s:**
  *flap → flap**s**, tab → tab**s**, loss → loss**es***

a) some words which end in **ch, sh, x** or **s**, add **es**:
*approach → approach**es**, fix → fix**es**, flash → flash**es***

b) if the word ends in a **consonant + y**, change to **ies**:
*velocity → veloci**ties***

c) Latin words may have different endings*:*
*axis → ax**es**, phenomenon → phenome**na***

- **remember**: *aircraft (sing) → aircraft (pl), series(sing) → series(pl)*
  spacecraft(sing) → spacecraft (pl)

B. *Countable and uncountable nouns*

- Countable nouns are things that can be counted**:**
  a force → four forces, an airplane → two airplanes, slat → slats
- Uncountable nouns cannot be counted as one, two, three etc.
  Pressure, ice, snow, fuel

C. *Compound nouns*

- A compound nouns is a noun that is made of two (or more) parts**:**

Many compound nouns are formed by using one noun (as an adjective) in front of another noun. A hyphen maybe used after the first word.

a flight path, a nose wheel, an airplane engine, an air-traffic controller.

- Some compound nouns are formed with an **-ing** form + noun.

  drinking water, a waiting room, a training aircraft, de-icing bay.

- Plurals of compound nouns are formed by adding **-(e)s** to the second word.

  a radio operator → radio operators, a turning point → turning points.

EXERCISES

Ex. 1. A. Give the plurals of these words:

1. airplane	11. area
2. flight	12. force
3. wing	13. cause
4. engine	14. axis
5. altitude	15. phenomenon
6. angle	16. velocity
7. path	17. flash
8. movement	18. fix
9. setting	19. approach
10. datum	20. slat

B.* Now put the plurals into four groups.

[iz]	[z]	[s]	[a]
forces	airplanes	flights	phenomena
…….	……	……	……..

Ex. 2. Complete the sentences using *the plurals* of the nouns in brackets.

1. There are certain … acting on the airplane in flight. (force)
2. The pilot must understand the … of the force. (effect)

3. When pressure is applied to the airplane … the basic forces change in magnitude. (control)

4. Some … require the use of airplane controls in order to return the airplane to the desired attitude. (factor)

5. Airplane … make an effort to increase the performance of the airplane. (designer)

6. Stability is the ability of a body to develop … that tend to return the body to the original position. (moment)

7. There are … that will require the use of airplane controls to return the airplane to the desired attitude. (condition)

8. Dynamic stability is a property which dampers the … . (oscillation)

Ex. 3. Choose the correct form.

1. *Aircraft / aircrafts* was gaining altitude.

2. Some *aircraft / aircrafts* are approaching the field.

3. The airplane has three *axis / axes* of rotation.

4. An imaginary line from the nose to the tail is a longitudinal axis / axes.

5. The pilots observed an unusual meteorological *phenomenon* / *phenomena*.

6. The designers must make compromise to satisfy the function and desired *performance / performances* of the airplane.

7. The pilots continued their flight at a higher *speed / speeds*.

8. The *pressure / pressures* of the water caused the tank to burst.

9. The pilots were short of *fuel / fuels*.

10. History of *aviation / aviations* started with the flight of Icarus who flew so high that the Sun melted his wings.

Ex. 4.* Make *compound nouns* from the words in columns A and B.

A	B
1. *engine*	a) *operation*
2. *flight*	b) *designers*
3. *airplane*	c) *instructor*
4. *power*	d) *manual*
5. *instruction*	e) *setting*
6. *flight*	f) *area*
7. *wing*	g) *attitude*
8. *pitch*	h) *controls*
9. *holding*	i) *indicator*
10. *heading*	j) *pattern*
11. *landing*	k) *point*
12. *turning*	l) *gear*

ARTICLES

REMEMBER

A. *The indefinite article*

- **a (an)** is used with countable nouns to indicate one.

*Negative stability is instability which can be illustrated by **a** ball on the top of **an** inverted bowl.*

B. *The definite article*

- **the** is used:

when a word is used a second time and whether it is thought of as *definite.*

*There is **an** aircraft over the airfield. **The** aircraft is Boeing 767.*

***The** airline has four bases: Miami, Key West, Orlanda and Tampa.*

- with the names of: oceans and seas, rivers, canals, deserts, island groups.

the Pacific, the Mediterranean, the Volga, the Panama canal, the Sahara, the Canaries.

- with various place-names.

The North / South Pole, the Far East, the Costa Brava, the Arctic etc.

- ***The*** is normally used before *same.*

*All airplane designers have **the same** goal: to obtain maximum efficiency, combined with adequate strength.*

***Note: The** is not usually included in the name on maps.*

C. *Zero article*

Zero article is used before:

- the uncountable nouns which are the names of materials, abstract nouns, liquids and other things we do not usually see as separate objects.

energy (*NOT an energy, two energies*)

weather (*NOT a weather, two weathers*)

- plural countable nouns, singular uncountable nouns in general sense and **special terms**.

***Pilots** are cautioned to operate flaps within the airspeed limitations.*

***Knowledge** of a few general principals of engine operation will help in avoiding engine failure.*

*The elliptical wing provides greater **lift** for the amount of **drag**.*

- continents, countries and towns.

*They flew to **Europe**, to **Paris**. I haven't been to **Spain**.*

- individual islands and mountains, lakes.

***Create, Lake Michigan, Mount Everest**.*

- the names of airports and stations, if the first word is usually the name of a person:

Kennedy Airport, Sheremetevo Airport, Victoria Station.

Note*: **the** USA, **the** Netherlands, **the** United Arab Emirates, **the** Philippines, **the** Sudan, **the** Ivory Coast.*

- when nouns are followed by numerals or a letter-digital code.

*The pilot followed **standard departure B2.***

The aircraft is in parking area A, on stand G6.

EXERCISES

Ex. 5. Add articles "*a/an*" where necessary.

… flight, … airplane, … force, … manner, … reaction, … lift, … altitude, … thrust, … manoeuvre, … effect, … flight number 535, … factor, … weight, … descent, … change, … climb, … pitch, … stand 5, … drag, … parking sector D.

Ex. 6. Rewrite the passage, putting *a, the* or *zero* article in the gaps.

… airplane flies on its … wings. … wings produce … lift, which is what we call … force that keeps us aloft. Lift must either overcome or equal … weight, depending on what we want … airplane to do. Think of most of these concepts as involving two forces, each opposing … other. Lift opposes … gravity. Wings produce … lift and they come in … variety of …sizes and …shapes. … jet fighter may have short wings, while … glider has long and narrow wings. Even … helicopter has wings – the main rotor blades do … same job as fixed wings do on … airplanes. They all have one function: to produce enough …lift to oppose … gravity.

Ex. 7.* Explain the articles used in these sentences.

1. I'm studying *aerodynamics* at the moment.
2. Can you smell *smoke?*
3. *The textbooks* you've ordered have arrived.

4. All *the information* you asked for is in this file of papers.
5. *A pilot* entered *the briefing room*.
6. There were *airplanes* in the hangar.
7. I've had *a* wonderful *flight.*
8. *Aircraft* is *a heavier-than-air craft*.
9. *Glass* is a difficult material to cut.
10. *Weather* is very changeable by its nature.
11. Do you know how to get to *Domodedovo Airport.*
12. *Mount Blanc* is higher than *Mount Etna*.

Stop and Check I. NOUNS, ARTICLES

Choose the correct variant.

1. The skill level comes with ... knowledge and practice.
   a) the; b) a; c) –.
2. We will also review ... take offs.
   a) –; b) the; c) a.
3. Let's take the opportunity to make every flight ... learning experience.
   a) the; b) –; c) a.
4. I must know more than how to fly ...
   a) aircrafts; b) aircraft; c) aircrafts.
5. Basic instrument flying is covered in ... Unit 4.
   a) a; b) the; c) –.
6. The students will go on practicing with a qualified flight ... .
   a) engineer; b) designer; c) instructor.
7. ... drag is the resistance of the air to a body moving through it.
   a) the; b) a; c) –.
8. Home television can also be a source of … weather data.
   a) the; b) –; c) a.

9. When ... lift and ... weight are equilibrium, the airplane neither gains nor loses altitude.

a) lift and weight; b) a lift and a weight; c) the lift and the weight.

10. Roll takes place around the longitudinal ... .

a) axes; b) axis; c) axos.

11. A safer pilot knows how ... work.

a) the flights control; b) flight controls; c) flight control.

12. Ground reference ... are designed to teach us how to compensate the effect wind can have on our track across the ground.

a) maneuveries; b) maneuveres; c) maneuvers.

Unit II

ADJECTIVES

REMEMBER

A. *Attributive and predicative adjectives*

- When an adjective comes before a noun, it functions as an attributive.
  *the **movable** control surfaces, a **dead** battery*
- When an adjective is separated from a noun and comes after the verb, it is predicative. An adjective can follow verbs like *be, get, become, turn, make, keep, seem, appear*.

  *The flight was really **difficult.***

  *The nose wheel seemed to be **extended**.*
- Many adjectives have suffixes or prefixes. Some of the more common suffixes are: **-able/ible** (*inflammable*), **-ful** (*useful*), **-less** (*careless*), **-ive** (*adjective*).
- There are a number of negative prefixes including the following:
  dis-(*disagreeable*), *un-*(*unsteady*), *il-*(*illegal*), *im-*(*impossible*), *in-* (*inflammable*), *ir-*(*irregular*)

EXERCISES

Ex. 8. Translate these word combinations paying attention to the adjectives.

An electrical system, movable control surfaces, a dead battery, a sufficient electrical charge, a safe and efficient manner, a steady flight, favourable forces, basic forces, a level flight, a new neutral position, an imaginary axis, static stability, a longitudinal axis, a conventional line, an external auxiliary power unit,

useful r eceptacles, col d w eather, s erious cons equences, a l ow oi l l evel, a hydraulic system, an aircraft vital system, inflammable liquids, a light airplane, an additional service, warm air, a thin fog, an expensive plane.

Ex. 9.* Add negative prefixes.

Possible, steady, com fortable, flexible, s eparable, r eplaceable, conveni ent, regular, s ignificant, f lammable, f air, s uccessful, equal , ea sy, f amiliar, r eal, a ctive, f requent, adequat e, vi sible, l ogical, pr acticable, r epairable, qui et, legal, measurable, r esistible, s afe, ef fective, r estricted, oper ative, r esponsible, po ssible, movable, reparable countable, accurate, respective, sensitive, favorable

REMEMBER

B. *Comparatives*

- Adjectives with one syllable add **er:**
  *high → high**er***
  Adjectives that end with **e** add **r:**
  *safe → safe**r***
- ***Note*** the irregulars:
  good → better, bad → worse, little → less, far → further /farther
- Adjectives with two syllables:
  a) generally use **more**:
  *serious → **more** serious, obvious→ **more** obvious*
  b) but if the adjective ends in **er, y** or **ow,** add **er:**
  narrow → narrower, steady → steadier, clever → cleverer
- Adjectives with three syllables or more add **more:**
  similar → more similar, hazardous → more hazardous
- When making comparisons use **than**:
  *This aircraft is more modern **than** that one.*

C. *Superlatives*

- Adjectives with one syllable add **est:**

  high → highest, safe → safest

- ***Note*** the irregulars:

  good → best ,bad → worst, little → least, far → fartherst / furthest

- Adjectives with two syllables use **most:**

  serious → most serious, careful → most careful, clever → cleverest

- But two-syllables adjectives ending in **er, y,** or **ow**, add **est:**

  narrow → narrowest, steady → steadiest (***y*** *changes to* ***i***)

- Adjectives with three syllables or more use **most**:

  similar → most similar, hazardous → most hazardous

- Superlatives are used to compare one thing with several others.

They are used with **the … in**, or **the … of**, sometimes they are used with just **the…**:

*This is **the** smallest helicopter **in** the world.*

*Concorde is **the** most graceful passenger plane **of** them all.*

*It is also **the** most expensive flying vehicle.*

D. *Non-gradable adjectives*

- A non-gradable adjective is one that cannot be qualified by words like **very, too, enough.** Non-gradable include words like: *dead, legal, wooden, aero-dynamic, lateral, elliptical, Russian etc*, where the meaning is strictly defined and cannot be qualified. They have certain typical suffices, such as: **-en, -an, -ic, -ical, -al** and denote qualities, state or shape of a substance through their relation to materials, place, time, and some action (*relative adjectives*).

empty (*NOT very empty*)

metal (*NOT too metal*)

- Other non- gradable adjectives are adjectives with a very strong meaning like: *wonderful, perfect, terrible, etc.* We can add some strength to these words by preceding them with **absolutely or really**:

absolutely wonderful

really perfect

EXERCISES

Ex. 10. Write the comparatives and the superlatives.

1. *strong – stronger – the strongest*
2. *serious – more serious – the most serious*
3. *heavy – heavier – the heaviest*
4. severe –… – …
5. narrow –…– …
6. safe – … – …
7. steady – … – …
8. high – … – …
9. steep – … – …
10. important – … – …
11. desirable – … – …
12. new – … – …
13. little – … – …
14. low – … – …
15. numerous – … – …
16. slight – … – …
17. good – … – …
18. thin – … – …
19. practical – … – …
20. accurate – … – …

Ex. 11. Complete the sentences using the correct form of *the adjective* in brackets. Add *than, the,* where necessary.

1. I think the baggage reclaim area in Domodedovo Airport is … in our airport. (big)

I think the baggage reclaim area in Domodedovo Airport is bigger than in our airport.

2. The speed of the Yak-18T is … that of the Tu-154. (low)

3. The elliptical wing is … rectangular one. (efficient)

4. Assuming equal wing area, the tapered wing produces … drag … the rectangular wing. (little)

5. Numerous wing designs were developed in an effort to determine … type for a specific purpose. (good)

6. If lift becomes … weight, the airplane will enter the climb. (great)

7. Even … displacement of the ball will activate the forces which make it move. (slight)

8. Don't let anyone tell you that flying is ... fun … it ever was. (little)

9. Airplanes are now one of … means of transport. (comfortable)

10. This system is … the last one we had. (easy)

Ex. 12.* Copy the chart into your notebook and put *the adjectives* in the correct columns.

Wide *efficient safe wooden desirable important great negative steady low severe specific stable English heavy convenient* ***static*** *essential imaginary fibrous aerodynamic narrow directional permanent slight sharp neutral movable auxiliary longitudinal obvious hazardous dead respective frontal vital near perfect big fundamental modern little poor inherent elliptical thin meteorological high tolerable structural*

Gradable	Non-gradable
Wide	*Static*
...	…

REMEMBER

E. ***Participle adjectives***

- Some *present participles* **(-ing forms)** and *past participles* **(-ed)** of verbs can be used as *adjectives* before the noun they describe.

*In **unaccelerated** flight the **opposing** forces are in equilibrium.*

- Some participles can be used immediately after nouns in order to identify or define the nouns. This use is similar to defining relative clauses.

*This landing gear is used on most airplanes **produced** today.*

*Density of the air **moving over the wing** is one of the factors that influence lift and drag.*

- Compound adjectives are often formed with a participle following a noun, adverb, or another adjective, and connected by a hyphen:

***Left-turning** tendencies of aircraft.*

***Instrument-referenced** climbs.*

*The **newly-built** terminal.*

*A **slow-increasing** speed.*

EXERCISES

Ex. 13. Complete the sentences with one of the following verbs in the correct form, either present or past participle adjectives.

rotate ***act apply restore invert lift desire require extend increase***

1. ”Torque” is a force, or a combination of forces, that produces a … motion of an airplane.

*”Torque” is a force, or a combination of forces, that produces a **rotating** motion of an airplane.*

2. Compromise must be made to satisfy the function and … performance.

3. Thrust is the forward … force.

4. Negative stability is in fact instability and can be illustrated by a ball on the top of an … bowl.

5. Even the slightest displacement of the ball can make it continue moving in the direction of the … force.

6. The … forces may be so great that they will force the airplane beyond the original position.

7. Modifications have been made, to increase … capacity.

8. The … structural strength is based on the intended use of the plane.

9. The … lift enables the pilot to make steeper approaches to landing without an increase in air speed.

10. … flaps also permit to use a slower speed to be used on approach and landing.

Ex. 14. Underline the correct *participle adjective.*

1. The *applied /applying* power helped to maintain altitude.

2. The density of the *moved / moving* air influences lift and drag.

3. The four *acting /acted* aerodynamic forces are considered to be basic.

4. *Raising / raised* ailerons lift on the wing by decreasing the curvature of the wing.

5. On most aircraft the elevators are movable control surfaces *hinging / hinged* to the horizontal stabilizer.

6. The *flying / flied* characteristics of modern light aircraft are far from complete. The range of the *operating / operated* speeds of light airplanes is not very large.

7. The tricycle landing gear is used on most airplanes *producing / produced* today.

Ex. 15.* Suggest *compound adjectives* with *participles.* One of the parts of the compounds is given to you. Choose the other part of the *-ing* and *-ed* forms below.

fixed ***demonstrated related driven turning climbing moving flying***

1. Airplane is a … – wing airplane.

*Airplane is a **fixed** – wing airplane.*

2. It is an engine – … structure.

3. Most general-aviation planes have a left … – tendency in slow flight mode.

4. Weather – … emergencies can be very hazardous situations.

5. A slow – … aircraft disappeared at the end of the runway.

6. In a left – … turn torque will tend to skid you into a steeper bank.

7. Practice –… at minimum controllable airspeeds is extremely useful.

8. The manufacture – … crosswind component is the limit that pilots experienced in a particular airplane may exceed.

Stop and Check II. ADJECTIVES

Choose the correct variant.

1. "Feeling" the airplane is one of … things a pilot must do.

a) the more important; b) more important; c) the most important.

2. Under the right circumstances, doing spins is … .

a) enjoyous; b) enjoyful; c) enjoyable.

3. ... way you can approach flying in general is to take knowledge you have and adopt it to a given situation.

a) gooder; b) the best; c) the more better.

4. We will discuss drag and lift … .

a) further; b) more further; c) furtherer.

5. He has worked as our flight engineer … 15 years.

a) more that; b) more than; c) more then.

6. This is a very … example of impact lift!

a) impracticable; b) unpracticable; c) dispracticable.

7. Airlines are equipped with … devices.

a) warned; b) warning; c) warnable.

8. … structural strength is based on the intended use of the airplane.

a) requiring; b) the requital; c) the required.

9. Every plane is different in its … weight.

a) very original; b) too original; c) original.

10. It took the company years to create and continuously improve their … potential.

a) the very technical; b) a technical ; c) technical.

11. It may take a combination of right rudder and right aileron to compensate for … tendency the torque of the engine generates.

a) the left-rolled; b) the rolling-left; c) the left-rolling.

12. Slow flight is an … flight regime.

a) most interesting; b) interesting; c) more interesting.

Unit III

PRESENT TENSES

REMEMBER

A. *Present Continuous* (*to be + V-ing*)

- The Present Continuous is used:
  to denote an action in progress
  The pilots are flying at the moment.
- To talk about something arranged or planned to do in the future.
  We ***are discussing*** new maintenance programmes with our manager **this weak**.

The pilots **are *still*** fly**ing** to the border.	(Positive)
The pilots **aren't (**are **not)** flying to the border ***now***.	(Negative)
Are the pilots fly**ing** to the border ***now***?	(General question)
Where are the pilots flying *at the moment*?	(Special question)
Who is flying?	(Subject question)

EXERCISES

Ex. 16. Write the *Present Participle* of the following verbs.

Load, gain, accelerate, apply, cause, control, descend, climb, maintain, increase, decrease, move, retard, twist, rotate, weigh, check, clean, train, test, activate, damper, extend, head, intersect, invert, require, originate, restore, roll, track, stabilize, become, return, tend, refer, provide, retract, stall, support, obtain, complete, convert, intend, use, describe, cool, be, burn, attach, connect, close.

Ex. 17. Rewrite each sentence as a *positive, negative or a question,* according to the instructions.

1. We are crossing the equator. (general question)

   Are we crossing the equator?

2. T he g round engi neers are i nstalling new equipment i n t he ai rcraft. (negative)

3. They are measuring actual noise level now. (special question – what)

4. We are charging batteries. (general question)

5. They are not suspecting landing gear damage. (positive)

6. The airplane is climbing to the assigned flight level. (special question – to what)

7. The flight engineer is decelerating the engine. (negative)

8. The aircraft is losing altitude. (special question – why)

9. They are still loading the aircraft. (subject question)

10. Are the engines gaining power? (positive)

REMEMBER

B. *Present Simple* (V_1)

- The Present Simple is used to denote repeated actions or habits.

  *The pilots **fly** abroad **twice a week.***

The pilots **usually *fly*** abroad.	(Positive)
The pilots ***don't (do not)* often** *fly* abroad.	(Negative)
Do the pilots ***fly*** abroad **every month**?	(General question)
How often *do* the pilots *fly* abroad?	(Special question)
Who flies?	(Subject question)
The pilot **seldom *flies abroad***.	(Positive)
The pilot ***does not fly*** abroad **very often**.	(Negative)
Does the pilot ***fly*** abroad **twice a week**?	(General question)
How often *does* the pilot ***fl*** abroad**?**	(Special question)

- Present Simple is used with stative verbs, which describe sentiments, thoughts and states rather than activities.

Do you need immediate assistance?

- Present Simple is used in clauses of time and condition, referring to the future. It is used after: ***when, unless, if, before, after, until, as soon as, whenever*** etc.

*We will depart **if** weather **gets** better.*

EXERCISES

Ex. 18. Rewrite each sentence as *a positive, negative or a question,* according to the instructions.

1. Lift counterbalances weight. (negative)

Lift doesn't counterbalance weight.

2. In flight certain forces act on an airplane. (general question)

3. The dynamic reaction of the air against its wings supports the airplane. (negative)

4. The landing gear system supports the airplane during the take-off run. (special question – what)

5. A number of various factors influence lift and drag. (negative)

6. Tailwheel permits the airplane to be controlled by the pilot throughout all operations while on the ground. (special question – what)

7. Airplane designers don't make an effort to improve the performance of aircraft. (positive)

8. The tricycle landing gear has some advantages over the conventional gear. (negative)

9. How many axes of rotation does the aircraft have? (positive)

10. The aircraft engine includes all accessories necessary for its functioning. (general question)

Ex. 19. Put the verb in brackets in *the Present Simple.*

1. Cargo aircraft … on the ramp. (park)

Cargo aircraft park on the ramp.

2. What … you … us to do? (recommend)

3. If the oil temperature … cold the pressure … higher than if the oil … hot. (be, be, be)

4. Pilots cannot take off unless they … clearance (receive).

5. … you … refueling? (need)

6. The flight control systems in most general aviation airplanes … of the cockpit controls, cables, pulleys and linkages. (consist)

7. The airplane neither … nor … altitude when lift and drag are in equilibrium. (gain, lose)

8. A bus-bar … the wiring system and … a common point from which voltage can be distributed throughout the system. (simplify, provide)

9. Circuit breakers … the same function as a fuse. (have)

10. If the generator … an inadequate supply of electrical power to the system the ammeter … it. (produce, show)

11. The gravity feed system … the force of gravity to transfer the fuel from the tanks to the engine. (utilize)

PRESENT SIMPLE OR PRESENT CONTINUOUS?

Ex. 20.* Underline the correct form of the verb.

1. We usually fly / are flying to Moscow twice a week.

We usually fly / are flying to Moscow twice a week.

2. The flight engineer *is looking/looks* at the dip stick.

3. The company ground engineers *are charging / charge* batteries at the moment.

4. Ground personnel always *inspect / are inspecting* an aircraft before departure and after landing.

5. They *are installing / install* some new equipment in the technical compartment now.

6. Aviation meteorologists always *are making / make* ceiling measurement.

7. Every aircraft *is having / has* certain weight restrictions.

8. The sumps *are filtering / filter* the fuel and trap water and sediment in a container.

9. The aircraft *holds / is holding* over the airfield to burn out fuel to landing weight.

10. What *do / are* you *advise/advising* us to do?

11. Glider pilots *are always turning / turn* staying in the updrafts.

12. When people *will get / get* airsick in small airplanes it usually *concerns / is concerning* passengers rather than someone who *is handling / handles* the controls.

REMEMBER

C. *Present Perfect* (*have* / *has* + V_3)

- The Present Perfect describes the indefinite past.

  The pilots have ***already*** *flown to Heathrow.*

Note: I flew to Heathrow **last** week. (definite time)

I have flown to Heathrow **before**. (indefinite time)

The pilots ***have already flown*** to Paris **this week**.	(Positive)
The aircraft ***has*** **just** ***landed*** at Heathrow.	
The pilots ***haven't*** **(*have not*) flown** to Heathrow **yet.**	(Negative)
Our captain *hasn't* (*has not*) *come* yet.	(Negative)
Have the pilots **ever** ***flown*** to Heathrow?	(General question)
What country has he flown?	(Special question)
Who has flown to Heathrow before?	(Subject question)

Note: *The Present Perfect Continuous* + **for / since** is used when something started in the past and is continuing now:

*I have been studying English **for** 5 years.* (*for + a period of time*)

*I have worked for this airline **since** 2003.* (*since + a point in time in the past*)

EXERCISES

Ex. 21. Write the third form of the following verbs (*past participle*).

Be, gain, apply, cause, descend, grow, climb, move, twist, rotate, weigh, train, shut, test, activate, leave, extend, intersect, hit, invert, roll, become, return, refer, provide, retract, support, obtain, complete, use, get, describe, burn, attach, connect, close, have, determine, keep, collide, break, drift, come, turn, begin, add, encounter, do, enhance, meet, obstruct, take, make, develop, know, cancel, perform, give, maintain, run, establish, achieve, go, damage, charge, expand, fail, teach, find, measure, cut, rise, start, simplify, drive, fly, allow, blow, put, help, lose, install, ignite, aviate, fall, see.

Ex. 22. Rewrite each sentence as a *positive, negative* or a *general question,* according to the instructions.

1. The pilots have already checked the controls. (negative)
   The pilots have not checked the controls yet.
2. The aircraft has not crossed the border yet. (positive)
3. They have equipped the aircraft with some new equipment. (question)
4. Have aircraft designers taken steps to reduce the pollution of air? (positive)
5. Have you read this instruction? (negative)
6. The flight engineer has already checked oil level. (question)
7. Captain has shut down engine № 1 because of low fuel pressure. (question)
8. The pilots have managed to start the engine from the APU. (negative)

9. The emergency service has covered the runway with foam. (question)

10. Engine № 3 has failed at take off (negative).

11. I have never been airsick as the pilot of an aircraft. (question)

12. I have been to several rural airports with a one-person FBO (fixed-base operator). (negative)

Ex. 23. Write these sentences filling the gaps with *for* or *since.*

1. I haven't seen our flight instructor … a while. He works … a company called Volga-Dnepr. He has worked … them … several years.

2. I have known this captain … many years. We have been friends … we were at flight school together. He has been our captain … six months.

3. I'm looking … Mike. We are room mates. He hasn't been in our room … 15.00 this afternoon. I'm sure you have already seen him.

4. … last month my friend has been preparing … his test flight. He has been interested in flying … he was a child and he has known … years that his future job will be related to flying in the sky.

Stop and Check III. PRESENT TENSES

Choose the correct variant.

1. The student … about stall speed of the aircraft at the moment.

a) asks; b) is asking; c) ask.

2. Like each of the stalls we … so far, there are a number of errors that pilots seem to make.

a) are reviewing; b) review; c) have reviewed.

3. Now, I … to see the view from the cockpit.

a) am expecting; b) expect; c) am expect.

4. We … a great deal of information related to the primary flight control systems in this unit.

a) just covering; b) have just covered; c) just cover.

5. The primary flight control systems … the elevator, aileron, and rudder, which are essential in controlling the aircraft.

a) consists of; b) is consisting of; c) consist of.

6. What … airspeed indicator …?

a) does … show; b) shows … –; c) do … show.

7. When the nose of the plane … you … the attitude indicator.

a) will drop … see; b) drops … you'll see; c) is dropping … you see.

8. How much … it … on the airplane we are flying?

a) is … depends; b) does … depends; c) does … depend.

9. We already … the altitude we need to fly.

a) gain; b) gaining; c) have gained.

10. What … the pilot control aircraft in a safe and efficient manner?

a) help; b) helps; c) does help.

11. Gliders have no engines, but they still fly, … ?

a) haven't they; b) have they; c) don't they.

12. A pump … oil from the sump to various parts of the engine.

a) is forcing; b) forces; c) force.

Unit IV

PAST TENSES

REMEMBER

A. *Past Simple* (V_2)

- Past Simple is used to denote a past action or state.

  *The aircraft **entered** a climb 2 minutes **ago.***

  ***There were** hazardous conditions during our **last** flight.*

Remember to use the infinitive without **ed** (regular verbs) for questions and negatives.

***Did** you **encounter** abrupt wind shear on final?*

Irregular verbs are irregular in the Past Simple in the positive only.

Note: ***What helped** the pilot to clear the obstacle*? (subject question)

The aircraft ***went around*** because of a vehicle on the runway.	(Positive)
The aircraft ***didn't (did not) go around*** and continued approach.	(Negative)
Did the aircraft ***go around***?	(General question)
Why ***did*** the aircraft ***go around***?	(Special question)
Who went around? **What happened**?	(Subject question)

EXERCISES

Ex. 24. Write *the past tense* of the following verbs.

Have, align, determine, keep, collide, eliminate, drift, come, turn, begin, add, encounter, do, enhance, meet, indicate, obstruct, refer, take, be, extend, make, develop, know, ensure, cancel, correct, abandon, perform, give, maintain, establish, achieve, separate, go, damage, charge, expand, fail, teach, find, steer,

measure, cut, pressurize, rise, shut, start, design, classify, simplify, drive, fly, cool, allow, burst, blow, put, help, lose.

Ex. 25. Write the sentences putting the verbs into *the Past Simple.*

1. The manufacturers … necessary flight instruments. (provide)

The manufacturers provided necessary flight instruments.

2. The use of instruments … pilots to operate the airplane more precisely. (enable)

3. It … the pilot's responsibility to prepare for the flight more thoroughly. (be)

4. The controller … the aircraft altitude. (know)

5. The fog … visibility half an hour ago. (reduce)

6. The pilots … advantage of favorable winds and weather conditions. (take)

7. The pilots… down the faulty engine. (shut)

8. Knowledge of the altitude … the pilot calculate true airspeeds. (help)

9. The aircraft designers … a new generation of instruments. (develop)

10. There … numerous errors in the magnetic compass. (be)

Ex. 26. Use the verbs into the Past Simple, keeping them as positives, negatives or questions.

1. My first flight instructor really … me what I know today. (teach)

My first flight instructor really taught me what I know today.

2. Why … the aircraft … about its lateral axis? (bank)

3. The captain … the assigned flight level. (not reach)

4. Most private pilots … their instructions from a local instructor at a local airport. (take)

5. The pilot … the altitude in accordance with air traffic rules. (not maintain)

6. … all pilots … the same requirements and license renewal 2 months ago? (meet)

7. The regulations … that an applicant for the pilot's license … a minimum number of take offs and landings at an airport with a control tower. (require, perform)

8. Maintenance engineers properly … the indicator yesterday. (calibrate)

9. Why … the aircraft … its altitude? (lose)

10. The instrument … an instantaneous indication of the smallest changes in attitude. (give)

REMEMBER

PRESENT PERFECT OR PAST SIMPLE?

Note: The difference between *the Present Perfect and the Past Simple.*

*He **has worked** as a pilot* **for ten years**. (= he is working **now**)

*He **worked** as a pilot* **for ten years**. (= he is **not** working **now)**

DO NOT use the Present Perfect if there is no connection with the present. (things that happened a long time ago)

The Past Simple tells us only about the past.

EXERCISES

Ex. 27.* Write these sentences putting the verb into *the Past Simple* or *Present Perfect* where necessary.

1. I … English for five years but then I stopped. (study)

I studied English for 5 years but then I stopped.

2. In 1783 Joseph and Etienne Montgolfier … the hot air balloon. (invent)

3. We … not … our simulator practice lately. (have)

4. Our flight crew … to the USA many times. (fly)

5. When … you … from the higher civil aviation institute? (graduate)

6. If you … to fly on runways that are thousands of feet longer than a small airplane needs, you may lack the ability to operate from runways that you will encounter at smaller airports. (learn)

7. Five minutes ago the airport authorities … a two-hour delay because of a heavy snowfall. (determine)

8. A German engineer named Otto Lilienthal … five types of monoplane gliders and two biplane gliders and all fixed-wing aircraft. (make)

9. A ground vehicle …suddenly … the runway. (obstruct)

10. The aircraft … at 10.45. (take off)

REMEMBER

B. *Past Continuous* (*was / were + V ing*)

Past Continuous is used to describe:

- temporary actions in progress in the past.

  *It **was raining** all night* **yesterday.**

- actions which were in progress when something else happened. These can often be introduced by conjunctions: *when, as, just as, while.*

  *The aircraft **arrived when** we **were entering** the arrival hall.*

- actions in progress at the same time

  ***While** the co-pilot **was reading** the checklist the captain **was listening** to the crew members' answers.*

- repeated actions with **always**.

  *When I began studying grammar I **was** **always** **making** mistakes.*

The aircraft ***was flying*** along the intended route **at that moment.**

(Positive)

The aircraft ***wasn't*** **(*was not*)** ***flying*** along the intended route **at 2. p.m. yesterday.** (Negative)

Was the aircraft ***flying*** along the intended route **at 5 p.m.?** (General question)

At what time ***was*** the aircraft ***flying***? (Special question)

What *was flying*? (Subject question)

EXERCISES

Ex. 28. Use *the Past Continuous* in the sentences below.

1. When we saw an aircraft it … . (descend).

When we saw an aircraft it was descending.

2. While the teacher … the new unit the students … at handouts. (explain, look)

3. The aircraft … high enough to clear the highest terrain. (fly)

4. At the conference aviation professionals … about whether that was the best way to learn to fly. (debate)

5. When the airplane … at a same absolute speed through less dense air the airspeed indicator showed a slower speed. (move)

6. When pilots learned to fly before they … always … a circular-slide rule. (use)

7. … the aircraft … under instrument meteorological conditions? (fly)

8. The airplane … when engine № 2 failed. (take off)

9. The aircraft … altitude when the pilots reached a 45° bank. (lose)

10. The pilot … at the aeronautical chart to see the elevations of airports and obstacles to determine how high he was above them. (look)

Ex. 29. Write *did, was* or *were* to complete these sentences.

1. What time … you leave?

What time did you leave?

2. What ... you say?

3. Why … the airport not working last night?

4. We … not understand.

5. The trainee … sitting in the cockpit.

6. From what side … the thunderstorm coming last morning?

7. When … you become a competent aviator?

8. The follow-me-car … waiting for us when we landed.

9. … you see the accident?

10. The shuttle bus … leaving when we got there.

REMEMBER

C. *Past Perfect* (*had* + V_3)

Past Perfect is used to describe:

- the first of two events in the past.

  *We **had attended** pre-flight briefing **before** the flight **began**.*

- a period of time leading up to a time in the past.

  By 1783 *aviation **had begun**.*

Note: When we have two past references we do not have to use the past perfect.

*After the ground engineers **finished** our aircraft maintenance, we **departed**.*

By 9 o'clock in the morning visibility ***had*** **already** ***reduced***. (Positive)

By 9 o'clock in the morning visibility ***hadn't (had not) changed*** **yet.** (Negative)

Had visibility ***reduced*** **by 9 o'clock?** (General question)

When ***had*** visibility ***reduced****?* (Special question)

What ***had reduced?*** (Subject question)

EXERCISES

Ex. 30. Use *the Past Perfect* in the sentences below.

1. The pilots … climbing before they saw a converging aircraft. (start)

   The pilots had started climbing before they saw a conflicting aircraft.

2. When the pilots received navigation assistance the aircraft … off the airway. (drift)

3. The weather … by the time we arrived at the airport. (improve)

4. When we left the airport the rain … already … . (start)

5. By the time the doctor came on board the sick passenger … consciousness. (lose)

6. When we arrived at our destination the ATC … the airport. (close)

7. It was the most graceful aircraft he … ever … . (see)

8. The controller … the route before the aircraft crossed the control zone. (change)

9. The aircraft already … FL 120 when the trouble started. (reach)

10. The weather … by the time we reached the airport. (improve)

Ex. 31.* Choose *the Past Perfect* or *the Past Simple* in the sentences below.

1. When I … to fly in 2002 I … my first lessons. (learn / take)

When I learned to fly in 2002 I took my first lessons.

2. I … all of my ground study before I … my certificate. (do, gain)

I had done all of my ground study before I gained my certificate.

3. Etienne Montgolfier … the first person to fly when he … in a hot air balloon. (become, fly)

4. The pilot who … recently … his private pilot's license, … into marginal weather conditions. (receive, take off)

5. The pilot … disoriented in the clouds because he … to use the instruments properly. (become, fail)

6. The greater angle of attack … more lift than the pilot … to remain level in cruise flight at a constant altitude. (generate, need)

7. After the pilot … the turn the aircraft … out on the correct heading. (complete, roll)

8. When I … to fly I … a college freshman. (learn, be)

Stop and Check IV. PAST TENSES

Choose the correct variant.

1. When I … to fly in 1998, I … my first lessons with a professional flight instructor.

a) learned … had taken; b) had learned … took; c) learned … took.

2. The problem … to be more serious than we … before.

a) turnt out … had expected; b) turned out … expected; c) turned out … had expected.

3. They … the airplane last month and I … it without any problems.

a) reassembled … flew; b) have reassembled … flew; c) were reassembled … was flying.

4. The aircraft … on the runway, when we … a dog near the runway.

a) touched down … were noticing; b) has touched down … notice; c) was touching … noticed.

5. We … power during the approach.

a) losed; b) lost; c) had lost.

6. … you … night landings at aviation school.

a) were … practicing; b) did … practice; c) have … practiced.

7. Originally all airports … fields.

a) are; b) had been; c) were.

8. There … some cases of collisions because of careless rejoins the traffic circuit in the past.

a) haven't been; b) were; c) was.

9. The pilot … the obstruction along the intended route because of the reduced visibility.

a) wasn't clear; b) didn't clear; c) hadn't clear.

10. The speaker said that the greatest number of mistakes that … aviation safety … by pilots.

a) influenced … have been made; b) have influenced … made; c) influenced … had been made

11. The aircraft …the course for two minutes because of airborne equipment error.

a) was drifting off; b) drifted off; c) had drifted off.

12. He took off into the wind, … ?

a) did he; b) hadn't he; c) didn't he.

Unit V

FUTURE ACTIONS

REMEMBER

A. *Future Simple* (*will + infinitive*)

The Future Simple is used:

- for a statement of future fact. This can be

  a) certain:

  *The flight **will take** five hours.*

  b) uncertain:

  *I think it **won´t rain** tomorrow.*

- for a sudden decision to do something (usually used with I or We):

  *I´**ll say** it again!*

- **shall** is generally used as a first person questions to make suggestions and offers (a modal meaning).

Shall I carry your luggage for you?

B. *Going to* (*be + going to*)

Going to is used:

- to predict the future, especially when we can see something that is about to happen.

*Look at those clouds. It´s **going to** rain!*

- To express a planned future action.

I´m going to book a flight to Zurich in two days´ time.

Note: this use is similar to present continuous:

I´m booking a flight to Zurich in two days´ time.

Going to	1. future plan-decided before time of speaking	We are going to leave next week.
	2. future result from present evidence	The co-pilot is going to monitor ATIS.
Will	1. future / willingness/ unwillingness	We'll gain the essential knowledge of the atmosphere. I won't do it.
	2. sudden decision made at time of speaking	We'll contact the met. office now.
Shall	3. offer/suggestion	Shall we call you later?
Going to or will	1. neutral future fact	I think the young pilot will be successful. I think the young pilot is going to be successful.
	2. first conditional	If it rains we are going to stay. If it rains we will stay.
	3. when/as soon as/etc	We will start descending as soon as there is opening in clouds. We are going to start descending as soon as there is opening in clouds.

C. *Future continuous* (*will be + V ing*)

Future Continuous is used:

- to describe an action or event that will be in progress at some time in the future.

I'll be listening to TAF at nine.

- to describe an activity or state that covers the whole of a future time period.

*We **ll be transporting** cargo to China for the next few weeks.*

- to describe a future event which has already arranged or a part of a regular routine.

*The flight manager **will be seeing** us tomorrow – I´ve invited him.*

Note: ***Future Continuous*** *is less intentional than* ***going to*** *and* ***present continuous.***

The flight engineer will be seeing us too: I'll talk to him then.

EXERCISES

Ex. 32. Write these sentences in full, putting the verbs into *the Future Simple.*

1. How long the flight (take)?

How much time will the flight take?

2. The pilots (decide) whether to depart according to weather conditions.

3. What's wrong with the weather radar? I (call) the maintenance?

4. Between hills or mountains, where there is a narrow valley, the wind (veer) from its normal course.

5. When … (be available) weather information?

6. This information (help) you make alternative plans if the weather conditions get worse.

7. An unstable north to northwest air stream (cover) the region.

8. We probably (meet) this crew in London.

9. They (not arrive) at the airport before midnight tonight.

10. Tomorrow there (be) another cold day in all parts of the country.

Ex. 33. Write the correct form of *going to, will* or *shall* for these sentences. If two answers are possible write the more likely one.

1. It … to snow tomorrow. (snow)

It's going to snow tomorrow.

2. The briefer … (give) you the exact reports of the weather.

3. You … (receive) the current weather at selected locations along your planned flight.

4. … we monitor ATIS now?

5. The weather man … (give) you the weather in everyday language if you request it.

6. As you … (fly) away from the home base you'd better have the aircraft and engine logbooks along.

7. We … (cover) unexpected weather conditions that may occur in flight.

8. You … (improve) your chances of getting out of trouble if you think clearly and fly the airplane.

9. The pilots … (avoid) thunderstorm activity to north.

10. According to the weather report the wind … (exceed) 20 knots at times.

Ex. 34.* Put one verb in each sentence into *the Present Simple* and the other verb into *will* / *won't* form.

1. When I … (see) him I ... (give) him your message.

When I see him I will give him your message.

2. When two air masses … (meet), they … (not mix) readily unless their temperatures, pressures, and relative humidities … (be) very similar.

3. If the warm air … (be) unsteady, cumulonimbus and altocumulus clouds … (form) and frequently … (produce) thunderstorms.

4. This hatch … (not open) unless you … (push) it hard.

5. Mist / fog … (occur) if the temperature and the dew point … (become) the same.

6. If the oil temperature … (be) cold, the pressure … (be) higher than if the oil … (be) hot.

7. As soon as lift … (become) less than weight the airplane … (enter) a descent.

8. After the airplane's equilibrium … (be disturbed), forces … (be activated) which … (tend) to return the airplane to its original position.

9. If you … (be) in doubt about the weather before take off, you … (have to decide) not to go.

10. Pilots … (have to) make decisions on the spot in case a thunderstorm that they … (not expect) … (form).

Stop and Check V. FUTURE ACTIONS

Choose the correct variant.

1. … I change the date of our departure?

a) do; b) will; c) shall.

2. He …to be an aeronautical engineer in a year.

a) will; b) is going; c) will going.

3. If you … too slowly in an airplane while pulling the nose higher to try to maintain flight, the wing …

a) will go … stall; b) will be going … will stall; c) go … will stall.

4. Humans … control the weather.

a) will never going to; b) will never; c) are never going.

5. I think, we … the exercise by flying at an altitude of between 600 and 1000 feet above the ground.

a) to begin; b) beginning; c) will begin/

6. As a student pilot you … strictly under VFR until you … sufficient training and flight experience to qualify for an instrument rating.

a) will be flying … gain; b) flies … will gain; c) will fly … will gain.

7. If … any clouds present, they … on the downwind side.

a) there is … will be; b) there … are; c) there are … will be.

8. Thunderstorms … to build throughout the midday and early evening

a) going to continue; b) continue; c) will continue/

9. To a meteorologist, *stable air* is air in which cumulus clouds … into thunderheads.

a) will be building up; b) will build up; c) are going build up.

10. This section … significant meteorological and aeronautical information.

a) is including; b) are going to include; c) will include.

11. The wind … from the southwest.

a) is shifting; b) going to shift; c) will be shift.

12. The tops of the showers … at a flight level of 18,000 feet.

a) will be; b) is; c) will.

Unit VI

GERUND, INFINITIVE

REMEMBER

A. *The Gerund*

- The gerund is used in the functions peculiar to a noun.
  Flying *is our job.* (*subject*) *I like* ***flying.*** (*object*)
- It is formed by adding ***ing*** to the infinitive:
  Maintain → maintaining
  The negative form is formed by adding ***not.***
  Would you mind ***not*** *smoking in the cockpit?*
- **Note** the changes that are sometimes necessary:
  *L**ie** → l**y**ing, ta**ke** → tak**ing, p**u**t** → pu**tt**ing*

B. *Prepositions + gerund*

- When a verb follows a preposition it takes the gerund:
  Check your passports ***before leaving****.*
  We thought ***about expediting*** *our arrival.*

EXERCISES

Ex. 35. Write the *ing* - form of these verbs.

Break, assess, specify, slide, dig, lead, freeze, sink, know, climb, travel, get, store, obtain, heat, provide, increase, stall, support, see, extend, control, use, move, inform, supply, charge, decrease, circulate, act, make, connect, install, trim, retract, head, roll, track, yaw, hold, avoid, delay, space, cool, observe, stabilize, study.

Ex. 36. Fill the gaps with *gerunds.*

1. … the aircraft altitude is vitally important to the pilot for several reasons. (know)

Knowing the aircraft altitude is vitally important to the pilot for several reasons.

2. Landing gear operating speed is the maximum speed for … and … the landing gear if the aircraft is equipped with retractable landing gear. (extend, retract)

3. A voltage regulator controls the rate of charge to the battery by … the electrical output. (stabilize)

4. The oil system provides a means of … and … oil throughout the internal components of the engine. (store, circulate)

5. Knowledge of a few general principles of engine operation will help the pilot in … engine failure. (avoid)

6. Raised ailerons reduce lift on the wing by … the curvature of a portion of a wing and decrease the angle of attack. (decrease)

7. … decisions concerning weather is particularly important for any flight activity. (make)

8. Flight Watch, the service provided by the FAA, is not intended to be used for … complete weather briefings or for the opening and closing of flight plans. (obtain)

9. If you begin … towering cumulus clouds on a warm, summer afternoon, it may mean a developing thunderstorm. (see)

10. Next to … how to physically manipulate the controls of an aeroplane, every pilot needs a working knowledge of the elementary principles of meteorology. (know)

Ex. 37.* Complete these sentences putting the verbs into *the Gerund* using a preposition from the list.

for	in	by	from
by	of	about	
on	after	for	of

1. Are you interested … (fly) abroad?

Are you interested in flying abroad?

2. Meteorologist's predictions are based … (observe) movements of large air masses.

3. Weather balloons equipped with a radio are used … (transmit) temperature, humidity, pressure and wind.

4. Weather radar is designed … (detect) and … (observe) weather phenomena.

5. When we talk … (form) ice, we mean ice that can form in certain weather conditions on the airframe of the airplane.

6. The aircraft ice protection is provided … (heat) of critical areas using hot air or electrical power.

7. The function of the fuel system is to provide a means … (store) fuel in the airplane and … (transfer) this fuel to the airplane engine.

8. During the process … (taxi) the plane out to the runway, or back to the ramp, you need to maintain safe control of the plane during windy conditions.

9. Report … (pass) the border.

10. When the pilot maintains a slight amount of engine power it will help him improve his ability to deal with the wind… (keep) the airspeed … (get) too slow.

INFINITIVE

REMEMBER

A. *The Infinitive*

- Depending on the construction, the infinitives are used with or without **to**.
  *I like **to fly**.*
  *Did you see the accident **happen**?*
- The negative form is formed by adding ***not***.
  *We decided **not to fly** because of bad weather.*

B. *To + infinitive* is used to express purpose.

*We need **to speak** to the aerodrome manager.*

***To use** the altimeter effectively, the pilot must understand its principle of operation.*

- After ***it + to be + adjective***:
  *It was dangerous **to fly** in heavy turbulence.*
  *It is necessary **to arrive** earlier than scheduled.*

C. Use of the infinitive *without to*:

The infinitive **without to** is used:

- after will, help, can, must etc.
  *Using instruments pilots **can operate** the airplane more precisely.*
  *Humans **will never control** the weather.*
- after **make, let** + noun / pronoun:
  *The snow removal procedure **made us delay** our flight.*
- after verbs of **seeing**, **hearing** and **feeling** + noun/ pronoun:
  *We saw the plane **arrive**.*

Note: Verbs of **seeing, hearing** or **feeling** can also use the Present Participle with an emphases of duration.

*We saw the plane **arriving**.*

EXERCISES

Ex. 38. Rewrite these sentences in full, putting the verbs in brackets into *the Infinitive*.

1. Knowledge of the altitude is necessary … (calculate) true airspeeds.

Knowledge of the altitude is necessary to calculate true airspeeds.

2. It is difficult … (realize) that the normal sea-level pressure upon the body is about 20 tons on the average person.

3. … (avoid) hazardous flight conditions pilots have to be aware of weather behavior.

4. When the equilibrium is disturbed, air begins … (flow) from areas of high pressure to areas of lower pressure.

5. The trim tabs enable the pilot … (trim out) control pressures.

6. The surface wind tends … (increase) in the late morning and … (continue) until shortly before evening.

7. Ice formation on the propeller causes it … (lose) efficiency.

8. When the cold front moves it causes the warm air … (cool) suddenly and … (form) cloud types.

9. My main reason for learning … (fly) was … (become) involved in the world of aviation.

10. We need … (know) which weather conditions present hazards to flight.

Ex. 39. Put the verbs in brackets into *the infinitive*. Use *to* where necessary.

1. It was thought that wind cannot … (affect) an aircraft once it was flying except for drift and ground speed.

2. One may … (wonder) why pilots need more than general information available from the predictions of the "weather man".

3. When flying near clouds pilots should … (remember) that a cloud is a storm factory.

4. Weather can … (be) the most decisive factor in making an extremely pleasant flight and it can also … (be) a demon at times.

5. When I started … (fly) I felt comfortable with my first flight instructor.

6. Pilots need … (know) the dew point of an air mass in which they are flying as well as the present surface temperature.

7. Always let controllers … (know) that you are a student pilot during every call you make to them at an ATC centre.

8. We saw the crew … (leave) the airplane.

9. The willing to get to an airport before night or bad weather makes pilots … (do) things they know they shouldn't.

10. … anticipate how an airplane will … (fly) in various flight modes is very important for a young pilot.

Ex. 40.* Use *the infinitive* in the negative form.

1. We asked him to arrange our meeting with the aerodrome manager.
   *We asked him **not to** arrange our meeting with the aerodrome manager.*
2. The controller asked the crew to deviate from the airway.
3. He was glad to remember that flight in details.
4. We decided to go to Spain on holiday.
5. They agreed to get on the airplane.
6. The pilots decided to avoid the thunderstorm to west.
7. We agreed to sign the documents.
8. He decided to meet them at the airport.
9. We were surprised to see the bus.
10. He said it to offend the cabin attendant.

REMEMBER

INFINITIVE OR GERUND?

D. Some verbs use *only* **the Gerund**, and some verbs use *only* **the Infinitive.**

Note the contrast between **the Gerund and the Infinitive:**

- The gerund is used:
  - after prepositions; – *Students-pilots are interested* ***in flying***.
  - as the Subject of the sentence; – ***Flying*** *is very exciting*.
  - after verbs**:** ***admit, avoid, consider, delay, deny, enjoy, feel like, finish, can't help, involve, keep on, mind, miss, postpone, practice, risk, stand, suggest, get used to;*** – *Our flight instructor* ***delayed solo flying*** .
- The infinitive is used:
  - after verbs: ***agree, appear, arrange ask, attempt, decide, expect, learn, fail, manage, offer, prepare, seem, refuse, hope, promise***; – *The captain* ***refused to delay*** *the departure.*
  - after certain nouns or adjectives; – *I have* ***enough time to arrive*** *in time.*
  - to express purpose; – *The aircraft turned* ***to avoid*** *the thunderstorm.*
  - after it + to be + adjective/noun; – *It is the pilot's responsibility* **to** ***gain*** *the essential knowledge about the flights instruments*.
- Some verbs (***start***, ***prefer***, ***like***, *etc*) can take the Gerund or the Infinitive with similar meaning.

  The crew preferred ***to maintain*** *present flight level.*

  The crew preferred ***maintaining*** *present flight level.*
- **Remember**, **stop** and **try** have a different meaning with the Gerund or the Infinitive.

  We stopped ***to watch*** *a new type of an airplane.*

  We stopped ***watching*** *a new type of an airplane.*
- The verb ***need*** can take either the Infinitive or the Gerund.

  Pilots need ***to check*** *the indications of the heading indicator frequently.* (active meaning)

  When you fly away from your home base, you need the altimeter ***to be checked*** *from time to time.* (*passive meaning*)

EXERCISES

Ex. 41.* Put the verb in *the gerund* or *the infinitive.*

1. We managed … (pass) the written test.

We managed to pass the written test.

2. I can't get used to … (fly) at night.

I can't get used to flying at night.

3. The fact that you are the pilot and passengers depend on you is reason enough … (take) the time … (learn) the proper way … (execute) a safe flight.

4. … (start) flight with an insufficient oil supply can lead to serious consequences..

5. We were getting tired so we stopped … (drink) some coffee.

6. … (practice) can also help pilots learn a lot.

7. It's really time … (go).

8. … (coordinate) all control pressures will … (become) second nature after only a few hours of instruction.

9. I really enjoy … (watch) students the first time they fly.

10. It is vitally important … (know) the aircraft's altitude.

11. The Heading Indicator is designed … (facilitate) the use of the magnetic compass.

12. When I learned … (fly) we used the circular slide rule type.

13. Today many pilots prefer (use) the electronic calculator version.

14. All barometric instruments need … (reed) properly.

15. Avoid … (fly) in thunderstorms.

Stop and Check VI. GERUND or IFINITIVE

Choose the correct variant.

1. It is good … weather information before the flight.

a) know; b) to know; c) knowing.

2. This information make pilots … alternative plans in time.

a) change; b) changing; c) to change.

3. … must be safe and soft.

a) lands; b)landing gear; c) landing.

4. Rain that falls from the base of clouds but evaporates before … the ground is called virga.

a) reach; b) to reach; c) reaching.

5. It is difficult … that the normal sea-level pressure upon the body is about 20 ton on the average person.

a) to realize; b) realizing; c)realize.

6. When did you start… private training lessons …a private pilot's license?

a) to take … achieve'; b) taking … to achieve; c) take … to achieve.

7. The turn and slip indicator is used for … an airplane without visual reference to the ground.

a) control; b) to control; c) controlling.

8. The heading indicator lets pilots … the use of the magnetic compass.

a) facilitating; b) facilitate; c) to facilitate.

9. The last thing you ever want … in an emergency situation is to lose control of yourself or the airplane.

a) to let to happen; b) to let happen; c) let happening.

10. During landings turbulence can …a pilot … .

a) cause … drop in; b) causing … drop in; c) cause … to drop in.

11. Be especially careful of … over a thunderstorm in a light airplane.

a) climb; b) climbing; c) to climb.

12. It is possible for the updraft … so strong that you can't … at a level attitude.

a) being … stay; b) be … to stay; c) to be … stay.

Unit VII

MODALS

REMEMBER

A. Modals are the small verbs like ***can, may, should, must*** which give certain meanings to main verbs.

We should stay.	*Positive*
We shouldn't stay. ***We should not stay.***	*Negative*
Should we stay? ***Why should we stay?***	*Questions*

Note:

- ***need*** can be ***needn't*** (modal form) or ***don't need to*** (verb form).
- Negative questions generally use ***n't***. If ***not*** is used, there is a different word order.

Shouldn't we stay?

Should we not stay?

B. ***Can, could, be able to***: tense changes

Present	***Can or am able to*** ***is able to*** ***are able to***
Past	***Could or was able to*** ***were able to***
Future	***Can or will be able to***

Note:

- ***can*** indicates future when used with a time word.

  be able to is used in all tenses. (**have been able to, had been able to**, etc)

- **could** and **was/were able to**:

  I could control an aircraft when I was twenty one. (*I knew how to do it*)

  I was able to control the aircraft because my instructor was in the cockpit. (*I managed to do it, because he helped me*)

C. *Must, have to:* tense changes

Present Simple	***Must or has/ have to***
Past Simple	***– had to***
Present perfect	***– has / have had to***
Future Simple	***– will have to***

Note:

- ***have to*** can be used in all tenses. It is not a modal verb, but has the same meaning as ***must,*** and is used instead of ***must*** in some tenses.
- In the simple present and simple past of ***have to,*** we use ***do, does*** and ***did*** to form questions and negatives:

  Does *he* ***have to*** *cancel the flight?*

  We ***didn't have to*** *make special arrangements to transport dangerous materials.*

- ***Must*** and ***have to*** have different meanings in the negative:

  You ***mustn't*** *leave.* (*obligation – you can't go*)

  You ***don't have to*** *leave.* (*no obligation – you can go or stay, as you like*)

- ***must*** sometimes indicates future when used with a time word:

  We ***must*** *arrive at the airport by the time appointed by the carrier to-morrow morning.*

D. *may, might*

- ***may*** and ***might*** indicate present or future possibility:
  *The airplane **may** arrive soon.*
  *The aircraft **migh**t arrive in time.*
- the negative of ***may*** is ***may not***.
- ***May** is used in formal English to mean **to be allowed to** (**to be cleared to**)*:

Present Simple	***May or am / is / are allowed / cleared to***
Past Simple	***– was/were allowed/cleared to***
Future Simple	***– will be allowed/cleared to***

EXERCISES

Ex. 42. Rewrite these sentences as *questions, positives or negatives* according to the instruction given.

1. We must go to the customs office now. (negative)
   We mustn't go to the customs office now.
2. At certain airspeeds and with certain flap settings, the instrument error may not occur. (positive)
3. Private pilot should adequately demonstrate his ability to plan, plot and fly a course without resort to electronic navigational aids. (Why-question)
4. We need to leave the traffic pattern. (negative)
5. Another chart format that pilots can use is the world aeronautical chart. (What-question)
6. In flight pilots must compensate for drift caused by the wind. (Why-question)
7. World aeronautical charts cannot serve the only purpose for flight planning. (positive)
8. All electronic aids that the pilot can see on the instrument panel will never relieve him of his responsibilities to plan and think. (question)

9. Before proceeding with further calculations, you need to determine your cruising altitude so that you can apply the winds aloft. (Why-question)

10. You should give a call at a specified point for wind, runway, and traffic information. (Where-question)

Ex. 43. Complete these sentences using the correct form of *can, could, be able to.* Where the two answers are possible, write them both. Use *the negative or question* according to the instructions.

1. It is the pilot's responsibility to gain the essential knowledge about how the instruments operate so that he … use them effectively. (positive)

It is the pilot's responsibility to gain the essential knowledge about how the instruments operate so that he can use them effectively.

2. Two minutes ago the controller … isolate one aircraft target among many and concentrate a flow of information upon it. (positive)

3. Pilotage is not very practical since pilots … use it at high altitudes and in all weather conditions. (negative)

4. We … meet you at the airport tomorrow night. (positive)

5. High ground and coastal reflection … deflect signals of NDB. (question)

6. Mountains and man-made obstructions … cut off the VHF signals. (positive)

7. Pilots … conduct an VFR flight in very good weather. (question)

8. The boundaries normally follow geographical state borders, but over international waters and parts of the world having good relations with their neighbors they … assume straight lines in accordance with ICAO recommendations. (positive)

9. Half an hour ago the pilots delayed their departure as they … fix technical problems. (negative)

10. The experienced pilot … quickly correct the deviation 2 minutes ago. (positive)

Ex. 44. Complete these sentences using the correct form of *must or have to.* Follow the instructions.

1. The pilot … be sure that the plane is flying high enough to clear the highest terrain or obstruction along the intended route. (present)

The pilot must be sure that the plane is flying high enough to clear the highest terrain or obstruction along the intended route.

2. Because the GPS unit can display so much data, pilots … spend some time practicing to become completely at ease with this system. (future)

3. To use the altimeter effectively pilots … thoroughly understand its principle of operation. (present)

4. Pilots … cancel their flight due to bad weather. (past)

5. The crew who intends to make a flight … at any case contact ATC at the aerodrome of departure. (present).

6. During our last flight the aircraft electrical systems and radios failed, so we … navigate on our own. (past)

7. Aviators … use charts to navigate. (present)

8. When you need to know about a certain local area or route of flight, you … study that portion in detail. (future)

9. Sorry, you … not smoke in the passenger compartment. (present)

10. An instrument pilot … rely on all of the information displayed on the IFR charts. (present)

Ex. 45. Complete these sentences using the correct form of *may or should.*

1. Ground engineers … periodically calibrate the airspeed indicator because leaks … develop or moisture … collect in the tubing.

Ground engineers should periodically calibrate the airspeed indicator because leaks may develop or moisture may collect in the tubing.

2. The needle on the instrument ... also show when the aircraft drifts off course.

3. Why … I learn to fly – this question … have multiple answers.

4. One … wonder why pilots need more than general information available from the predictions of the weather man.

5. During rough air with severe turbulence pilots … reduce the airspeed to maneuvering speed or less.

6. There … be as many kinds of altitude as there are reference levels from which altitude is measured.

7. Student-pilots … understand that the purpose of the rudder in flight is to control yaw and not to turn the airplane.

8. On a good day or especially at night you … pick up an AM radio station hundreds of miles away.

9. Aviation specialists … pay more attention to learning Aviation English.

10. According to FAA regulations airline pilots … retire at age 60 as the risk of physical incapacitation increases dramatically after that age.

Stop and Check VII. MODALS

Choose the correct variant.

1. A pilot who has trained in a tricycle aircraft … to undergo several hours of instruction before … fly it.

a) must … can; b) has ... able to; c) will have … being able to.

2. You … remember, that in the end, we humans aren't really taught much; we learn.

a) are; b) must to; c) have to.

3. Pilots … have a working knowledge of enough aerodynamics and theory of flight to safely fly their airplanes.

a) have to; b) are allowed to; c) didn't have to.

4. The other method by which all airplanes … increase the amount of lift produced by wings is to raise the leading edge upward.

a) able to; b) will be allowed; c) can.

5. You … know how to perform a stall in order to properly land the airplane.

a) may to; b) need to; c) should to.

6. When you fly away from your home base, you …to set the altimeter from time to time, so that you are reading your correct course.

a) may be able; b) can be able; c) need to be able.

7. They … transmit because of transmitter trouble half an hour ago.

a) were able to; b) were not able; c) were not able to.

8. … make any adjustments to the VHF system?

a) do you have; b) had you to; c) did you have to.

9. Dead reckoning doesn't depend on looking at the ground and using checkpoints that pilot … see.

a) can; b) is allowed to see; c) has had to.

10. The pilots … to follow the desired track due to heavy thunderstorm.

a) couldn't; b) have; c) were unable.

11. The most difficult part of determining whether you … legally fly under VFR is the determination of your distance from whatever clouds are present.

a) might; b) may; c) are able.

12. There is a very good general rule, that states, that pilots who are not instrument rated … fly above cloud base.

a) couldn't; b) must not; c) should.

Unit VIII

PASSIVE VOICE (to be+ Past Participle)

REMEMBER

- ***Passive Voice*** is used to describe what happens to people or things, often as a result of action performed by other people or things.
- Passive sentences indicate that what happens is more important than who is responsible:

ACTIVE

They installed <u>new equipment</u> in the aircraft.

PASSIVE

<u>The new equipment</u> was installed in the aircraft.

FORM 1

Present Simple	*The airport **is closed**.*
Past Simple	*The airport **was closed.***
Future Simple	*The airport **will be closed.***
Present Perfect	*The airport **has been closed.***
With modal verbs	*The airport **may be closed.***

FORM 2

Positive	*The airport **is closed**.*
Negative	*The airport **is not closed.***
Question (general)	***Is** the airport **closed.***
(special)	*Why **is** the airport **closed**?*

- The rules for choice of tense are the same in the Passive as they are for active sentences.

- The passive is frequently used to describe scientific or mechanical processes or in formal explanations.

The passive is frequently used to…

EXERCISES

Ex. 46. Rewrite these sentences putting the verbs in *the Passive.*

1. The runway-in-use … /select/ with regard for the wind strength and direction. (The Present Simple)

The runway-in-use is selected with regard for the wind strength and direction.

2. A landing aircraft … /not permit/ to cross the beginning of the runway on its final approach until a preceding departing aircraft is airborne. (The Future Simple)

3. At some busy airports GMC … /subdivide/ with separate frequencies for inbound and outbound aircraft. (The Present Simple)

4. When the ATC controller's reasonable assurance that the safe separation that … /provide/ existed, the landing clearance … / issue/. (The Past Perfect, The Past Simple)

5. Flight and navigation instruments … / develop/ that allow a properly trained pilot to operate in cloud and other conditions not suitable for visual flight. (The Present Perfect)

6. If the runway … /occupy/ by the traffic which has just landed, the other aircraft … /tell/ to "line up". (The Present Simple, the Future Simple)

7. Minimum flight visibility requirements … / establish/ which … / know/ as the Visual Flight Rules –VFR. (The Present perfect, the Present Simple)

8. The world … /divide/ into FIRs which, above a certain flight level varying between states, become UIRs. (The present Simple)

9. The new route … /mark/ by radio navigation aids. (The Future Simple)

10. Metreport … /pass/ two minutes ago. (The Past Simple)

Ex. 47. Rewrite these sentences as *questions, positives or negatives* keeping them in the same tense.

1. Clearance Delivery frequency is used to pass route clearances to aircraft prior to taxi. (question)

Is Clearance Delivery used to pass route clearance to aircraft prior to taxi?

2. Identity labels are added to aircraft images on the radar display and mode S data link to conform position information. (what-question)

3. An aircraft will not be permitted to take off until the preceding aircraft is seen to be airborne or has reported "airborne". (when-question)

4. Airspace Restrictions and Hazards are depicted on aeronautical charts. (negative)

5. Within the FIR structure airspace is subdivided according to the amount and type of aeronautical activity which takes place in it. (how-question)

6. Is Air Traffic Control provided in controlled airspace to all flights. (positive)

7. A short time is allowed beyond slot time to cover taxiing delays. (question)

8. Start up is approved. (negative)

9. Standard Instrument Departure routes are designed to minimize conflict with those taken by arriving aircraft. (why-question)

10. Delay is not expected. (positive)

Ex. 48.* Rewrite these sentences in the Passive.

1. Controllers pass <u>information</u> to help pilots maintain their own separation.

<u>Information</u> is passed by the controllers to help pilots maintain their own separation.

2. ICAO designed a new classification system for civil airspace to both simplify airspace structure and establish more commonality between countries.

3. At many controlled airports controllers authorize pilots to join traffic circuit directly onto final, base or downwind.

4. To protect IFR traffic ICAO placed additional restrictions on VFR flights.

5. Controllers usually feed scheduled and other large aircraft straight into the final approach.

6. The crew will file their flight plan to ATC in 10 minutes.

7. A pilot intending to make a flight will in any case contact ATC at the aerodrome of departure.

8. Flight plan is the basis on which ATC gives clearance for the flight to proceed.

9. The controller handed over the en-route aircraft to the next ACC.

10. When two or more aircraft are at the same cruising level, the controller gives priority to the preceding aircraft.

Ex. 49. Complete these sentences using *the Passive* after *modals* or their equivalents listed below.

may	***can***	***have to***	
should	***must***		***need***

1. Air Control … /split/ into two frequencies for different runways or sectors of an airport.

Air Control may be split into two frequencies for different runways or sectors of an airport.

2. Care … /take/ that there is no possibility of confusion with another aircraft which may have just landed.

3. The phrase "Start up at your discretion" together with an expected departure time … / use/ so that the decision is on the crew to start engines at a convenient time.

4. Aircraft at many airports with nose-in parking at the terminal … /push/ backwards by a tractor into a position from they can taxi for departure.

5. Advisory routes … /establish/ instead of an airway in some less developed parts of the world where traffic is relatively light.

6. The flight … /make/ in accordance with clearance and notified procedures.

7. The airspace … /regulate/ to ensure safe use by the light volume of aircraft.

8. If the weather is poor an SRA approach ... /do/ half a mile from touch-down.

9. The controller … /notify/ when a pilot is unfamiliar with a certain area.

10. Speed control also … /use/ to even out the flow of traffic.

Stop and Check VIII. PASSIVES

Choose the correct variant.

1. The government came to conclusion that the airspace … into different blocks.

a) ought to broken up; b) ought be broken up; c) ought to be broken up.

2. Access to Class B by a student pilot … .

a) is highly restricted; b) highly restricted; c) is highly restrict.

3. More detailed information about types of airspace … in your ground school.

a) will cover; b) will be covered; c) will have covered.

4. While you are flying in class E airspace, you … to be talking to any controller.

a) were not required; b) are not required; c) are required.

5. It … that some trunk routes have common segments with dual or even triple designators.

a) have to be noted; b) should to be noted; c) should be noted.

6. How … VMC criteria …?

a) is … expressed; b) are … expressed; c) – … expressed.

7. Advisory routes … instead of an airway in some less developed parts of the world.

a) may be established; b) might be establish; c) is to be established.

8. E xcept w hen t he f light p lan …, an ai rcraft com mander m ust i nform ATC when the aircraft lands within or leaves controlled airspace.

a) cancels; b) has been cancelled; c) will be cancelled.

9. Decent clearance … 3 minutes ago.

a) has been obtained; b) is obtained; c) was obtained.

10. You … learn enough about the basics of weather during your training so that this information is meaningful to you.

a) are required to; b) were required; c) had been required to.

11. The airspace … to ensure safe use by the high volume of aircraft.

a) must regulate; b) needs regulated; c) needs to be regulated.

12. Pilots … to file a flight plan.

a) are just advised; b) have just been advised; c) are never advised.

Unit IX

SENTENCE STRUCTURE

REMEMBER

A. *Relative clauses*

- **A relative clause** gives more information about someone or something referred to in a main clause. Some relative clauses (**defining relative clauses**) are used to specify which person or thing we mean or which type of person or thing we mean:

Note*: who* – people
***which / that* –** things

Excessive strength requires additional weight ***which/that lowers the efficiency of the airplane.***

Those of us ***who have been flying for some years*** *have probably had problems with engines.*

- **Relative clauses** begin with a relative pronoun: a **wh-word (who, which, etc.) or that.** No commas are used before or after relative clauses. However, sometimes when *the relative pronoun* is the subject of the clause, it is omitted and a **zero** *relative pronoun* **is used**.

Most of engines **(*which / that*) *you will encounter*** *are equipped with horizontally opposed cylinders.*

The range of operating speeds of light airplanes **(*which /that*) *we have today*** *is not very large.*

- In formal styles a preposition is often used before the relative pronouns: **which** and **whom**.

*The load imposed upon the wings depends upon the type of flight **in which** the airplane is engaged.*

- **A non – defining relative clause** gives some additional information about the whole or a part of a particular number of things or people with **of which** or **of whom** after words: ***all, both, each, many most, neither, none, part, some, a number*** (one, two, etc.*;* the first, the second, etc.) and **superlatives** (the best, the biggest, etc.).

*An airplane which is to be used for normal flying does not need the strength of an airplane intended to be used for acrobatic flight or other purposes, **some of which** involve severe in - flight stresses.*

*The propeller's rotation creates several forces, **all of which** affect how the airplane flies.*

A non – defining relative clause can be left out without destroying the meaning of the sentence.

- Commas (,) are used in these clauses.

EXERCISES

Ex. 50. Complete the sentences with the correct or most appropriate *relative pronoun*. Give alternatives if possible. Use '–' to indicate *zero relative pronoun.*

1. Even the slightest displacement of the ball can activate greater forces … will cause the ball to continue moving in the direction of the applied force.

*Even the slightest displacement of the ball can activate greater forces **that / which** will cause the ball to continue moving in the direction of the applied force.*

2. The conventional landing gear … was used on most airplanes manufactured years ago is still used on some.

3. Some aircraft are equipped with a rudder trim tab … reacts in a similar manner on the rudder as does the elevator trim tab on the elevator.

4. Airports outside controlled airspace possess an aerodrome traffic zone through … flight is prohibited without ATC clearance.

5. In modern training airplanes … you come across elevator forces are trimmed by a device called a trim tab.

6. "Torque" is a force … produces a twisting or rotating motion of an airplane.

7. The pilot … does not have the traffic in sight may request avoiding action.

Ex. 51. Join each pair of sentences together to make one sentence, using *which* (*that*). Write the second sentence as a relative clause.

1. Excessive strength requires additional weight. It lowers the efficiency of the airplane.

Excessive strength requires additional weight which/that lowers the efficiency of the airplane.

2. Wing modifications were made. They increased lifting capacity and generally improved flight characteristics.

3. Turbulent air also creates additional load. These loads increase as the severity of the turbulence increases.

4. Airplane strength is measured basically by a total load. The wings are capable to carry it without permanent damage to the wing structure.

5. Wing flaps are a movable part of the wing. They are normally hinged to the inbound trailing edge of each wing.

6. The elevator trim tab is a small auxiliary control surface. It acts on the elevators.

7. Directional control of airplane is obtained through the use of the rudder. It controls yaw in flight.

8. There are two types of landing gear. They are used on light airplanes.

9. Some light aircraft are equipped with retractable gear. It helps to reduce drag.

10. Warning indicators are usually provided in the cockpit. They show whether the wheels are extended and locked, or retracted.

Ex. 52. Add an appropriate preposition below in the space.

at ***for around at from of in during on at***

1. The altitude … which the air becomes smooth varies from day today.

The altitude ***at*** *which the air becomes smooth varies from day to day.*

2. The us age of a bus bar s implifies the w iring s ystem and pr ovides a common point … which voltage can be disturbed throughout system.

3. The job of the elevators in the climb is that of airspeed control – to get to the speed … which the greatest excess horsepower is available.

4. The ya wing m otion of t he pl ane i s controlled by t he r udder pedal s … which you put your foot and press it.

5. The altitude … which the air becomes smooth varies from day to day.

6. The type of wing design for a particular airplane depends almost entirely on the purpose … which that airplane is to be used.

7. Most of your first flight … which you t ry to find out how t he var ious controls affect the plane your instructor will also show you how the plane flies by itself.

8. The airplane has three axes of rotation … which movement takes place.

9. Aircraft are given a time … which to pass the specified point outbound.

10. A good many controllers are also pilots, all … whom take their job seriously.

Ex. 53.* Re-write the passage. Put in that or which. If you don't need these words, put them in brackets like this: (that) (which).

Once in a while something comes along ***that*** makes you s it up s traight i n the seat – a real emergency. Very few engines fail with a sudden break down … provides also lately no warning. Cases in … a piston, a crankshaft, or other major component can fail are far between. Knowing proper engine operating procedures f or t he p lane … y ou f ly can r educe the chances … a p ilot-induced component failure might take place. You should review the operations manual

for the plane … you control in order to avoid engine-out situation … a pilot can encounter. During normal engine combustion the forces within each cylinder generate powers … push the piston downward. But when the mixture has been leaned excessively, the fuel / air mixture in the cylinder burns too rapidly and in the wrong burn pattern. This can result in explosively high pressures building within the cylinder … can eventually damage the piston, valves, and cylinder assembly. Detonation can cause failure of these components … can result complete engine failure in severe cases. Through proper utilization in accordance with the manufacture's recommendations you can extend the engine's life and reduce your operating costs.

REMEMBER

B. ***Participle clauses***

- The information about someone or something can be given by the **Present Participle**(**-ing)**, the **Past Participle (-ed)** or **being + Past Participle (-ed)** clause after a noun. These clauses are often similar to *defining relative clauses* beginning with **which**, **who**, or **that**.

When in flight, there are certain favorable and unfavorable forces ***acting on the plane.***

The elevator trim tab is a small auxiliary control surface ***hinged at the trailing edge of the elevators.***

Pilots are cautioned to operate the flaps within the airspeed limitations set for the particular airplane ***being flown.***

- An **-ing** clause is used instead of a defining relative clause with an *active verb*.

A number of factors ***influencing lift and drag*** *include: wing area, shape of the airfoil, angle of attack and airspeed.* (*or A number of factors that influence lift and drag…*)

- A **Past Participle** or **being + Past Participle is used** instead of a *defining relative clause* with a *passive verb*.

The goal of airplane designers and manufacturers is to obtain maximum efficiency ***combined with adequate strength****.* (*or … efficiency which is combined with…*)

This example illustrates the effect of the air ***being diverted down from a wing****.* (*or … the air which is being diverted down …*)

EXERCISES

Ex. 54. Rewrite the following sentences, substituting *the relative clause* with *a participle clause.*

1. Vertical axis is an imaginary line which extends vertically through the intersection of the lateral and longitudinal axis.

Vertical axis is an imaginary line extending vertically through the intersection of the lateral and longitudinal axis.

2. Fixed leading edge portion of airfoil is a wing or tail plane which forms slot ahead of main surface.

3. The elevator trim tab is a small auxiliary control surface which is hinged at the trailing edge of the elevators.

4. The controls which are used to give the pilot longitudinal control around lateral axis are the elevators and elevator trim tabs.

5. Speed of the air which passes over the wing and density of the air which moves over the wing are among the factors that influence lift and drag.

6. Individual brakes which are installed on each main wheel permit the pilot to use brake individually as an aid to steering.

7. The tricycle landing gear is used on most airplanes which are produced today.

8. All commercial airplanes that move over the world's major landmasses are under positive air traffic control.

9. The amount of air which is pumped down for a Boeing 747 to create lift for its roughly 8000,000 pounds takeoff weight is incredible indeed.

10. The goal of airplane designers is to obtain maximum efficiency which is combined with adequate strength.

Ex. 55. Join each pair of sentences together to make one sentence, using one of the following words. Where two answers are possible, choose the more likely one.

after ***by*** ***when*** ***while***

1. The group of controllers worked in en route center. They monitored and directed traffic during the cruise phase of flight.

The group of controllers worked in en route center by monitoring and directing traffic during the cruise phase of flight.

2. Each aircraft comes out of the factory. It needs an airworthiness certificate.

3. When you approach an airfield it is necessary to look at warning indicators, which indicate whether the wheels are extended or retracted.

4. When a pilot remembers a few general principals of engine operation, he can avoid engine failures.

5. The pilot plans his flight properly. It is always possible to make mistakes.

6. Designers and manufactures are trying to improve the performance of the aircraft. They are increasing its speed.

7. The pilot avoided the accident. He changed the angle of attack of the horizontal stabilizer.

8. You can use elliptical wing. You should remember that it provides greater lift for the amount of drag, but doesn't have as good stall characteristics as the rectangular wing.

REMEMBER

C. *Compound sentences*

- A **compound sentence** is a sentence which consists of two or more **clauses**, coordinated with each other. This **clause** is a part of a sentence which has a subject and a predicate of its own. In a compound sentence, the clauses are of equal importance. They may be linked by means of link words: **and, or, but, so, or**, **because, however, nevertheless, although, whereas, yet, still**, etc.), sometimes preceded by a comma or with a semi-colon or colon.

*Pilots expect to receive a landing clearance at about four miles on final approach, **but** this is not always possible due to departing traffic.*

*Approach Control is the link between Area and Aerodrome Control, **although** in some parts of the world it may serve a large area in absence of a proper Area Control service.*

Note: and – gives extra information;

but, however, nevertheless, and although – contrast ideas;

because – gives the reason;

so – expresses consequence;

whereas – is used in contrast or comparison;

yet – means even so;

or – gives the alternative;

⇩

I have operated three types of aircraft.	**and** *I have flown two types of helicopters.* **but** *I have never operated helicopters.* ***so*** *I know how to control them.* **because** *I have been working for this company for 15 years.* **however**, *I have never flown any helicopters.* **whereas** *my friend has operated 4 types.* etc…

EXERCISES

Ex. 56. Write one of the link words given below in the correct place in these sentences. Use each word for two sentences. Where two answers are possible, choose the more likely one.

and but so *because* ***or before although after***

1. The phrase "*expect late landing clearance*" is sometimes heard … light aircraft in a busy circuit may receive it only on very short final.

The phrase "expect late landing clearance" is sometimes heard ***because*** *light aircraft in a busy circuit may receive it only on very short final.*

2. The turns are normally to the right … there is some change above a certain flight level.

3. An offset VOR / DME pattern can be established along an inbound radial … it can be along an outbound radial.

4. The runway - in- use is selected with regard for wind strength and direction, … normally a pilot will expect to lend or take off as nearly to the wind as possible.

5. All of our pretake off engine and cockpi t c hecks have been com pleted … we are ready to take off.

6. You should personally visit a control tower … you take your private pilot flight test.

7. We'll land \ on the runway … the tower clears us to land.

8. If a radar directed circuit is flown, the terms *downwind, base leg, and final* are used where necessary … the area of sky covered is far bigger than in the normal visual traffic.

Ex. 57. Rewrite the sentences using the link words given. You may need to change some words. Where two answers are possible, choose the more likely one.

1. A closing heading of 30* is recommended. Only a gentle turn is necessary to lock on when the aircraft intercepts the ILS. (so)

A closing heading of 30 is recommended **so** only a gentle turn is necessary to lock on when the aircraft intercepts the ILS.*

2. An aircraft must be identified. It can receive a radar control. (before)

3. Precision Approach Radar (PAR) is nowadays confined mainly to military ATC. It is still in common use at civil airports in Russia. (but)

4. Subsequent landing aircraft are vectored not less than five miles behind. At certain locations reduction of the separation to three miles is authorized to ensure maximum utilization of the arrival runway. (although)

5. A landing clearance may be given at the marked juncture. It is more useful to give it at the four-mile range. (but)

6. It might be necessary to put the arriving aircraft into the holding pattern based upon a radio beacon. A busy traffic situation often exists. (because)

7. Airways flights will be transferred to the ACC. They have been separated from any conflicting traffic by Approach or Departure Control. (after)

8. The first aircraft will descend from the lowest level of the holding stack and commence its approach when instructed. The second aircraft in the approach sequence may be told to descend to the level previously occupied by the first one. (whereas)

9. At many controlled airports the standard join is not used. Aircraft are authorized to join directly onto final, base, or downwind. (and)

10. ICAO allows landing clearance to be issued when the proper separation will exist when the aircraft crosses the RW threshold. It must not be issued until the preceding landing aircraft has crossed the RW threshold. (however)

Stop and Check IX. RELATIVE AND PARTICIPLE CLAUSES

Choose the correct variant.

1. Associated with Ground Control is the Clearance Delivery frequency … is used to pass route clearances to aircraft prior to taxi.

a) –; b) which; c) where.

2. We will tell the departure controller … we are.

a) that; b) what; c) who.

3. Start – up requests should always be made by aircraft … to fly airways to avoid unexpected delays.

a) who intend; b) intend; c) intending.

4. The first aircraft will descend from the lowest level of the holding point … it will commence its approach when instructed.

a) or; b) and; c) because.

5. … height on the precision approach must a missed approach be initiated?

a) in which; b) on which; c) at which.

6. Many pilots … fly into non tower airports without turning on their radios don't hear many transmissions.

a) which; b) –; c) who.

7. Can you see the vehicle … on the maneuvering area?

a) which operate; b) operating; c) operated.

8. A suitable point on the approach path … by the radio beacon serves as a check point in timing successive approach.

a) marks; b) marked; c) that marking.

9. From time to time pilots get into situations … are not really dangerous but are beyond their level of experience.

a) that; b) where; c) who.

10. Look at the aircraft … the controller is monitoring!

a) which; b) –; c) where.

11. You should also know the airplane … .

a) that fly; b) you are flying; c) flying.

12. The response … from the ACC has important information and instructions.

a) is receiving; b) that receiving; c) received.

BIBLIOGRAPHY

1. Alexander L.G. Longman English Grammar Practice for Intermediate Students. Self-study edition with key / L.G. Alexander. – Longman, 1997.

2. Digby Beaumont and Colin Grange. The Heinamann English Grammar. An Intermediate Reference and Practice Book. – Longman, 1992.

3. Elaine Walker. Grammar Practice for Intermediate Students / Elaine Walker, Steve Elsworth. – Longman, 1996.

4. Elaine Walker. Grammar Practice for Upper Intermediate Students / Elaine Walker, Steve Elsworth. – Longman, 1996.

5. Harmer Jeremy. The Practice of English Language Teaching / Harmer Jeremy. – Pearson Educated Limited, 2000.

6. Hornby A.S. Oxford Advanced Learner's Dictionary of current English / A.S. Hornby. – Oxford University Press, 1995.

7. Martin Huwings. Advanced Grammar in Use / Martin Huwings. – Cambridge University Press, 1999.

8. Michael C. Love. Flight Maneuvers / C. Michael. – McGgraw-Hill, 1999.

9. Michal Swan. Practical English Usage / Michal Swan. – Oxford, 1995.

10. Raimond Murphy. English Grammar in Use. (Intermediate) / Raimond Murphy. – Cambridge University Press, 1994.

11. Soars John. Headway (Intermediate and Upper Intermediate) / Soars John, Soars Liz. – 1997.

12. Seymour Simon. Amazing Aircraft. SeaStar Books. – San Francisco, 2002.

13. The Wordsworth Book of Spelling Rules. – Wordsworth Editions Ltd., 1995.

14. Virginia Evans. Round-Up. English Grammar Practice (Upper Intermediate), 2001.

15. William K. Kershner. The Student Pilot's Flight Manual. – Iowa State Press, 2001.

19. Англо-русский авиационно-космический словарь / под ред. А.М. Мурашкевича. – М., 1974.

16. Жималенкова Т.М. Универсальный справочник по грамматике английского языка / Т.М. Жималенкова, Н.А. Мальцева. – М.: Глосса, 1995.

17. Марасанов В.П. Англо-русский словарь по гражданской авиации / В.П. Марасанов. – М., 2000.

18. Мюллер В.К. Новый англо-русский словарь: 16 000 слов / В.К. Мюллер. – М., 2001.

20. Нагорная А.В. Английский для поступающих в вузы: учеб. пособие / А.В. Нагорная, И.И. Гребенкина. – Ульяновск: УлГПУ, 2003.

21. Павлоцкий В.М. Практикум по грамматике английского языка / В.М. Павлоцкий, Т.М. Тимофеева. – СПб.: Игрек-М, 1996.

23. Периодические издания ИКАО, ИАТА и других международных организаций гражданской авиации: «Flight International», «Pilot», «ICAO Journal» и др.

22. Шавкунова Л.В. Авиационный английский: учеб. пособие / Л.В. Шавкунова. – Ульяновск: УВАУ ГА, 2004.

Appendix I

Key to exercises

UNIT I

Ex. 1. A.

1. airplanes
2. flights
3. wings
4. engines
5. altitudes
6. angles
7. paths
8. movements
9. settings
10. data
11. areas
12. forces
13. causes
14. axes
15. phenomena
16. velocities
17. flashes
18. fixes
19. approaches
20. slats

B.

[iz]	**[z]**	**[s]**	**[a]**
forces	airplanes	flights	data
causes	engines	paths	phenomena
velocities	altitudes	movements	
fixes	angles	slats	
flashes	areas		
approaches	settings		
axes	wings		

Ex. 2.

1. forces
2. effects
3. controls
4. factors
5. designers
6. moments
7. conditions
8. oscillations

Ex. 3.

1. aircraft	6. performance
2. aircraft	7. speed
3. axes	8. pressure
4. axis	9. fuel
5. phenomenon	10. aviation

Ex. 4.*

1. engine operation	5. instruction manual	9. holding pattern
2. flight controls	6. flight instructor	10. heading indicator
3. airplane designers	7. wing area	11. landing gear
4. power setting	8. pitch attitude	12. turning point

Ex. 5.

a flight, an airplane, a force, a manner, a reaction, lift, an altitude, thrust, a maneuver, an effect, flight number 535, a factor, weight, a descent, a change, a climb, pitch, stand 5, drag, parking sector D.

Ex. 6.

An airplane flies on its wings. The wings produce lift, which is what we call the force that keeps us aloft. Lift must either overcome or equal weight, depending on what we want the airplane to do. Think of most of these concepts as involving two forces, each opposing the other. Lift opposes gravity. Wings produce lift and they come in a variety of sizes and shapes. A jet fighter may have short wings, while a glider has long and narrow wings. Even a helicopter has wings – the main rotor blades do the same job as fixed wings do on airplanes. They all have one function: to produce enough lift to oppose gravity.

UNIT II

Ex. 8.

Система электроснабжения; подвижные панели управления; разряженная батарея; достаточный электрический заряд; безопасный и эффективный способ; установившийся полет; благоприятные силы; основные силы; горизонтальный полет; новое нейтральное положение; воображаемая ось; статическая стабильность; продольная ось; условная линия; аэродромный источник питания; используемые разъемы; холодная погода; серьезные последствия; низкий уровень масла; гидравлическая система; жизненно важная система самолета; невоспламеняющаяся жидкости; легкий самолет; дополнительное обслуживание; теплый воздух; редкий туман; дорогостоящий самолет.

Ex. 9.*

Impossible, unsteady, uncomfortable, inflexible, inseparable, irreplaceable, inconvenient, irregular, insignificant, inflammable, unfair, unsuccessful, unequal, uneasy, unfamiliar, unreal, inactive, infrequent, inadequate, invisible, illogical, impracticable, irreparable, , unquiet, illegal, immeasurable, irresistible, unsafe, ineffective, unrestricted, inoperative, irresponsible, impossible, immovable, irreparable, uncountable, inaccurate, irrespective, insensitive, unfavorable.

Ex. 10.

4. severe – more severe – the most severe
5. narrow – narrower – the narrowest
6. safe – safer – the safest
7. steady – steadier – the steadiest

8. high – higher – the highest

9. fibrous – more fibrous – the most fibrous

10. important – more important – the most important

11. desirable – more desirable – the most desirable

12. new – newer – the newest

13. little – less – the least

14. low – lower – the lowest

15. numerous – more numerous – the most numerous

16. slight – slighter – the slightest

17. good – better - the best

18. thin – thinner – the thinnest

19. practical – more practical – the most practical

20. accurate – more accurate – the most accurate

Ex. 11.

2. The speed of the Yak-18T is lower than that of the Ty-154.

3. The elliptical wing is more efficient than rectangular one.

4. Assuming equal wing area, the tapered wing produces less drag than the rectangular wing.

5. Numerous wing designs were developed in an effort to determine the best type for a specific purpose.

6. If lift becomes greater than weight, the airplane will enter the climb.

7. Even the slightest displacement of the ball will activate the forces which make it move.

8. Don’t let anyone tell you that flying is less fun than it ever was.

9. Airplanes are now one of the most comfortable means of transport.

10. This system is easier than the last one we had.

Ex. 12.

Gradable			Non-gradable	
efficient	straight	tolerable	negative	dead
safe	heavy	low	structural	respective
high	convenient	obvious	imaginary	frontal
desirable	essential	hazardous	fibrous	vital
important	thin	near	aerodynamic	perfect
great	narrow	big	directional	fundamental
steady	slight	modern	permanent	inherent
severe	sharp	little	auxiliary	elliptical
specific	neutral	poor	longitudinal	English
stable	movable		meteorological	wooden

Ex. 13.*

2. desired
3. acting
4. inverted
5. applied
6. restoring
7. lifting
8. required
9. increased
10. extended

Ex. 14.

2. The density of the moving air influences lift and drag.

3. The four acting aerodynamic forces are considered to be basic.

4. Raised ailerons lift on the wing by decreasing the curvature of the wing.

5. On most aircraft the elevators are movable control surfaces hinged to the horizontal stabilizer.

6. The flying characteristics of modern light aircraft are far from complete. The range of the operating speeds of light airplanes is not very large.

7. The tricycle landing gear is used on most airplanes produced today.

Ex. 15.

2. engine-driven
3. left-turning
4. weather-related
5. slow-moving
6. left-climbing
7. practice-flying
8. manufacture-demonstrated

UNIT III

Ex. 16.*

Loading, gaining, accelerating, applying, causing, controlling, descending, climbing, maintaining, increasing, decreasing, moving, retarding, twisting, rotating, weighing, checking, cleaning, training, testing, activating, dampening, extending, heading, intersecting, inverting, requiring, originating, restoring, rolling, tracking, stabilizing, becoming, returning, tending, referring, providing, retracting, stalling, supporting, obtaining, completing, converting, intending, using, describing, cooling, being, burning, attaching, connecting, closing.

Ex. 17.

2. The ground engineers are not installing new equipment in the aircraft
3. What are they measuring now?
4. Are we charging batteries?
5. They are suspecting landing gear damage.
6. To what flight level is the airplane climbing?
7. The flight engineer is not decelerating the engine.
8. Why is the aircraft losing altitude?

9. Who is still loading the aircraft?

10. The engines are gaining power.

Ex. 18.

2. Do certain forces act on an airplane in flight?

3. The dynamic reaction of the air against its wings doesn't support the airplane.

4. What supports the airplane during the take-off run?

5. A number of various factors don't influence lift and drag.

6. What permits the airplane to be controlled by the pilot throughout all operations while on the ground?

7. Airplane designers make an effort to improve the performance of aircraft.

8. The tricycle landing gear doesn't have some advantages over the conventional gear.

9. The aircraft has three axes of rotation.

10. Does the aircraft engine include all accessories necessary for its functioning?

Ex. 19.

2. What do you recommend us to do?

3. If the oil temperature is cold the pressure will be higher than if the oil is hot.

4. Pilots cannot take off unless they receive clearance.

5. Do you need refueling?

6. The flight control systems in most general aviation airplanes consist of the cockpit controls, cables, pulleys and linkages.

7. The airplane neither gains nor loses altitude when lift and drag are in equilibrium.

8. A bus-bar simplifies the wiring system and provides a common point from which voltage can be distributed throughout the system.

9. Circuit breakers have the same function as a fuse.

10. If the generator produces an inadequate supply of electrical power to the system the ammeter will show it.

11. The gravity feed system utilizes the force of gravity to transfer the fuel from the tanks to the engine.

Ex. 20.

2. is looking
3. are charging
4. inspect
5. are installing
6. make
7. has
8. filter
9. is holding
10. do you advise
11. always turn
12. get airsick; concerns; handles

Ex. 21.*

Been, gained, applied, caused, descended, grown, climbed, moved, twisted, rotated, weighed, trained, shut, tested, activated, left, extended, intersected, hit, inverted, rolled, become, returned, referred, provided, retracted, supported, obtained, completed, used, got, described, burnt, attached, connected, closed, had, determined kept, collided, broken, drifted, come, turned, begun, added, encountered, done, enhanced, met, obstructed, taken, made, developed, known, canceled, performed, given, maintained, run, established, achieved, gone, damaged,

charged, expanded, failed, taught, found, measured, cut, risen, started, found, simplified, driven, flown, allowed, blown, put, helped, lost, installed, ignited, aviated, fallen, seen.

Ex. 22.

2. The aircraft has crossed the border.

3. Have they equipped the aircraft with some new equipment?

4. Aircraft designers have taken steps to reduce the pollution of air.

5. You have not read this instruction.

6. Has the flight engineer checked oil level yet?

7. Has the captain shut down engine № 1 because of low fuel pressure?

8. The pilots have not managed to start the engine from the APU.

9. Has the emergency service covered the runway with foam?

10. Engine № 3 has not failed at take off.

11. Have you ever been airsick as the pilot of an aircraft?

12. I have not been to any rural airports with a one-person FBO (fixed-base operator).

Ex. 23.

1. I have not seen our flight instructor for a while. He works for a company called Volga-Dnepr. He has worked for them for several years.

2. I have known this captain for many years. We have been friends since we were at flight school together. He has been our captain for six months.

3. I'm looking for Mike. We are room mates. He hasn't been in our room since 15.00 this afternoon. I'm sure you have already seen him.

4. Since last month my friend has been preparing for his test flight. He has been interested in flying since he was a child and he has known for years that his future job will be related to flying in the sky.

UNIT IV

Ex. 24.

Had, aligned, determined, kept, collided, eliminated, drifted, came, turned, began, added, encountered, did, enhanced, met, indicated, obstructed, referred, took, was/were, extended, made, developed, knew, ensured, canceled, corrected, abandoned, performed, gave, maintained, established, achieved, separated, went, damaged, charged, expanded, failed, taught, found, steered, measured, cut, pressurized, rose, shut, started, designed, classified, simplified, drove, flew, cooled, allowed, burst, blew, put, helped, lost.

Ex. 25.

2. The use of instruments enabled pilots to operate the airplane more precisely.

3. It was the pilot's responsibility to prepare for the flight more thoroughly.

4. The controller knew the aircraft altitude.

5. The fog reduced visibility half an hour ago.

6. The pilots took advantage of favorable winds and weather conditions.

7. The pilots shut down the faulty engine.

8. Knowledge of the altitude helped the pilot calculate true airspeeds.

9. The aircraft designers developed a new generation of instruments.

10. There were numerous errors in the magnetic compass.

Ex. 26.

2. Why did the aircraft bank about its lateral axis?

3. The captain didn't reach the assigned flight level.

4. Most private pilots took their instructions from a local instructor at a local airport.

5. The pilot did not maintain the altitude in accordance with air traffic rules.

6. Did all pilots meet the same requirements and license renewal 2 months ago?

7. The regulations required that an applicant for the pilot's license performed a minimum number of takeoffs and landings at an airport with a control tower.

8 .Maintenance engineers properly calibrated the indicator yesterday.

9. Why did the aircraft lose the altitude?

10. The instrument gave an instantaneous indication of the smallest changes in attitude.

Ex. 27.

2. invented
3. have not had
4. has flown
5. did you graduate
6. have learned
7. determined
8. made
9. has obstructed
10. took off

Ex. 28.

2. was explaining; were looking
3. was flying
4. were debating
5. was moving
6. were always using
7. was the aircraft flying
8. was taking off

9. was altitude

10. was looking

Ex. 29.

2. What did you say?

3. Why wasn't the airport working last night?

4. We didn't understand.

5. The trainee was sitting in the cockpit.

6. From what side was the thunderstorm coming last morning?

7. When did you become a competent aviator?

8. The follow-me-car was waiting for us when we landed.

9. Did you see the accident?

10. The shuttle bus was leaving when we got there.

Ex. 30.

2. When the pilots received navigation assistance the aircraft had drifted off the airway.

3. The weather had improved by the time we arrived at the airport.

4. When we left the airport the rain had already started.

5. By the time the doctor came on board the sick passenger had lost consciousness.

6. When we arrived at our destination the ATC had closed the airport.

7. It was the most graceful aircraft he had ever seen.

8. The controller had changed the route before the aircraft crossed the control zone.

9. The aircraft had already reached the assigned level when the trouble started.

10. Weather had already improved by the time we reached the airport.

Ex. 31.

3. became; flew

4. had recently received; took off

5. became; had failed

6. generated; needed

7. had completed; rolled out

8. learned; was

UNIT V

Ex. 32.

2. The pilots will decide whether to depart according to weather conditions.

3. What's wrong with the weather radar? Shall I call the maintenance?

4. Between hills or mountains, where there is a narrow valley, the wind will veer from its normal course.

5. When will weather information be available?

6. This information will help you make alternative plans if the weather conditions get worse.

7. An unstable north to northwest air stream will cover the region.

8. We will probably meet this crew in London.

9. They won't arrive at the airport before midnight tonight.

10. Tomorrow there will be another cold day in all parts of the country.

Ex. 33.

2. The briefer will give you the exact reports of the weather.

3. You will receive/are going to receive the current weather at selected locations along your planned flight.

4. Shall we monitor ATIS now?

5. The weather man will give you the weather in everyday language if you request it.

6. As you are going to fly away from the home base you'd better have the aircraft and engine logbooks along.

7. We will cover unexpected weather conditions that may occur in flight.

8. You will improve your chances of getting out of trouble if you think clearly and fly the airplane.

9. The pilots are going to avoid thunderstorm activity to north.

10. According to the weather report the wind will exceed/is going to exceed 20 knots at times.

Ex. 34.

2. When two air masses meet, they won't mix readily unless their temperatures, pressures, and relative humidity are very similar.

3. If the warm air is unsteady, cumulonimbus and altocumulus clouds will form and frequently produce thunderstorms.

4. This hatch won't open unless you push it hard.

5. Mist / fog will occur if the temperature and the dew point become the same.

6. If the oil temperature is low, the pressure will be higher than if the oil is hot.

7. As soon as lift becomes less than weight the airplane will enter a descent.

8. After the airplane's equilibrium is disturbed, forces will be activated which will tend to return the airplane to its original position.

9. If you are in doubt about the weather before take off, you will have to decide not to go.

10. Pilots will have to make decisions on the spot in case a thunderstorm that they don't expect forms.

UNIT VI

Ex. 35.

Breaking, a ssessing, s pecifying, s liding, di gging, l eading, fre ezing, s inking, knowing, climbing, t raveling, g etting, storing, obtaining, heating, providing, increasing, stalling, supporting, seeing, extending, controlling, using, moving, i nforming, s upplying, char ging, decreasing, ci rculating, acting, making, connecting, ins talling, tr imming, retracting, heading, r olling, t racking, yaw ing, holding, avoiding, delaying, spacing, cooling, observing, stabilizing, studying.

Ex. 36.

2. for extending; retracting
3. by stabilizing
4. storing; circulating
5. in avoiding
6. by decreasing
7. making
8. for obtaining
9. seeing
10. knowing

Ex. 37.

2. on observing
3. for transmitting
4. for detecting and observing
5. about forming
6. by heating
7. of storing and transferring
8. of taxing
9. after passing
10. in keeping; from getting

Ex. 38.

2. to realize
3. to avoid
4. to flow
5. to trim out
6. to increase; continue
7. to lose
8. to cool; form
9. to fly; to become
10. to know

Ex. 39.

1. affect	6. to know
2. wonder	7. know
3. remember	8. leave
4. be; be	9. do
5. to fly	10. to anticipate; fly

Ex.40.

2. The controller asked the crew not to deviate from the airway.
3. He was glad not to remember that flight in details.
4. We decided not to go to Spain on holiday.
5. They agreed not to get on the airplane.
6. The pilots decided not to avoid the thunderstorm to west.
7. We agreed not to sign the documents.
8. He decided not to meet them at the airport.
9. We were surprised not to see the bus.
10. He said it not to offend the cabin attendant.

Ex. 41.

3. The fact that you are a pilot and passengers depend on you is reason enough to take the time to learn the proper way to execute a safe flight.
4. Starting flight with an insufficient oil supply can lead to serious consequences.
5. We were getting tired so we stopped to drink some coffee.
6. Practicing can also help pilots learn a lot.
7. It's really time to go.
8. Coordinating all control pressures will become second nature after only a few hours of instruction.
9. I really enjoy watching students the first time they fly.
10. It is vitally important … (know) the aircraft's altitude.

11. The Heading Indicator is designed … (facilitate) the use of the magnetic compass.

12. When I learned … (fly) we used the circular slide rule type.

13. Today many pilots prefer (use) the electronic calculator version.

14. All barometric instruments need ... (reed) properly.

15. Avoid … (fly) in thunderstorms.

UNIT VII

Ex. 42.

2. At certain airspeeds and with certain flap settings, the instrument error may occur.

3. Why should private pilot adequately demonstrate his ability to plan, plot and fly a course without resort to electronic navigational aids.

4. We needn't / don't need to leave the traffic pattern.

5. What chart format can pilots use?

6. Must pilots compensate for drift caused by the wind in flight?

7. World aeronautical charts can serve the only purpose for flight planning.

8 .What electronic aids can the pilot see on the instrument panel to relieve him of his responsibilities to plan and think?

9. Why do you need to determine your cruising altitude before proceeding with further calculations?

10. Where should you give a call for wind, runway, and traffic information.

Ex. 43.

2. Two minutes ago the controller was able to isolate one aircraft target among many and concentrate a flow of information upon it.

3. Pilotage is not very practical since pilots cannot / are not able to use it at high altitudes and in all weather conditions.

4. We can meet you at the airport tomorrow night.

5. Can high ground and coastal reflection deflect signals of NDB?

6. Mountains and man-made obstructions can cut off the VHF signals.

7. Can pilots conduct a VFR flight in very good weather?

8. The boundaries normally follow geographical state borders, but over international waters and parts of the world having good relations with their neighbors they can assume straight lines in accordance with ICAO recommendations.

9. Half an hour ago the pilots delayed their departure as they were not able to fix technical problems.

10. The experienced pilot was able to quickly correct the deviation 2 minutes ago.

Ex. 44.

2. Because the GPS unit can display so much data, pilots will have to spend some time practicing to become completely at ease with this system.

3. To use the altimeter effectively pilots must / have to thoroughly understand its principle of operation.

4. Pilots had to cancel their flight due to bad weather.

5. The crew who intends to make a flight must / have to at any case contact ATC at the aerodrome of departure.

6. During our last flight the aircraft electrical systems and radios failed, so we had to navigate on our own.

7. Aviators have / must use charts to navigate.

8. When you need to know about a certain local area or route of flight, you will have to study that portion in detail.

9. Sorry, you mustn't smoke in the passenger compartment.

10. An instrument pilot has to / must rely on all of the information displayed on the IFR charts.

Ex. 45.

2. The needle on the instrument may also show when the aircraft drifts off course.

3. Why should I learn to fly – this question may have multiple answers.

4. One may wonder why pilots need more than general information available from the predictions of the weather man.

5. During rough air with severe turbulence pilots should reduce the airspeed to maneuvering speed or less.

6. There may be as many kinds of altitude as there are reference levels from which altitude is measured.

7. Student-pilots should understand that the purpose of the rudder in flight is to control yaw and not to turn the airplane.

8. On a good day or especially at night you may pick up an AM radio station hundreds of miles away.

9. Aviation specialists should pay more attention to learning Aviation English.

10. According to FAA regulations airline pilots should retire at age 60 as the risk of physical incapacitation increases dramatically after that age.

UNIT VIII

Ex. 46.

2. won't be permitted
3. is subdivided
4. had been provided, was issued
5. have been developed
6. is occupied; will be told
7. have been established; are known
8. is divided
9. will be marked
10. was passed

Ex. 47.

2. What is added to aircraft images on the radar display and mode S data-link to conform position information.

3. When won't an aircraft be permitted to take-off?

4. Airspace Restrictions and Hazards are depicted on aeronautical charts.

5. How is airspace within the FIR structure subdivided?

6. Air Traffic Control is provided in controlled airspace to all flights.

7. Is a short time allowed beyond slot time to cover taxiing delays?

8. Start up is not approved.

9. Why are Standard Instrument Departure routes designed?

10. Delay is expected.

Ex. 48.

2. A new classification system was designed by ICAO for civil airspace to both simplify airspace structure and establish more commonality between countries.

3. At many controlled airports pilots are authorized to join traffic circuit directly onto final, base or downwind.

4. Additional restrictions on VFR flights were placed by ICAO to protect IFR traffic.

5. Scheduled and other large aircraft are usually fed straight into the final approach.

6. The flight plan will be filed to ATC by the crew in 10 minutes.

7. ATC will be contacted by a pilot intending to make a flight at the aerodrome of departure in any case.

8. Flight plan is the basis on which clearance is given by ATC for the flight to proceed.

9. The en-route aircraft was handed over to the next ACC by the controller.

10. When two or more aircraft are at the same cruising level, priority is given to the preceding aircraft.

Ex. 49.

2. Care must be taken that there is no possibility of confusion with another aircraft which may have just landed.

3. The phrase "Start up at your discretion" together with an expected departure time may be used so that the decision is on the crew to start engines at a convenient time.

4. Aircraft at many airports with nose-in parking at the terminal have to be pushed backwards by a tractor into a position from which they can taxi for departure.

5. Advisory routes should be established instead of an airway in some less developed parts of the world where traffic is relatively light.

6. The flight must be made in accordance with clearance and notified procedures.

7. The airspace needs to be regulated to ensure safe use by the light volume of aircraft.

8. If the weather is poor an SR A approach can be done half a mile from touchdown.

9. The controller must be notified when a pilot is unfamiliar with a certain area.

10. Speed control also can be used to even out the flow of traffic.

UNIT IX

Ex. 50.

2. that / which
3. that / which
4. that / which
5. which / that
6. that / which
7. who

Ex. 51.

2. Wing modifications that /which increased lifting capacity and generally improved flight characteristics were made.

3. Turbulent air also creates additional load which /that increases as the severity of the turbulence increases.

4. Airplane strength is measured basically by a total load which / that the wings are capable to carry without permanent damage to the wing structure.

5. Wing flaps that / which are normally hinged to the inbound trailing edge of each wing are a movable part of the wing.

6. The elevator trim tab is a small auxiliary control surface that / which acts on the elevators.

7. Directional control of airplane is obtained through the use of the rudder that /which controls yaw in flight.

8. There are two types of landing gear which /that are used on light airplanes.

9. Some light aircraft are equipped with retractable gear which / that helps to reduce drag.

10. Warning indicators which / that show whether the wheels are extended and locked or retracted are usually provided in the cockpit.

Ex. 52.

2. from	7. during
3. at	8. around
4. on	9.at
5. at	10. of
6. for	

Ex. 53.

Once in a while something comes along ***that*** makes you sit up straight in the seat – a real emergency. Very few engines fail with a sudden break down which / that provides also lately no warning. Cases in which a piston, a crank-

shaft, or other major component can fail are far between. Knowing proper engine operating procedures for the plane (which / that) you fly can reduce the chances which / that a pilot-induced component failure might take place. You should review the operations manual for the plane (which / that) you control in order to avoid engine-out situation (which / that) a pilot can encounter. During normal engine combustion the forces within each cylinder generate powers which / that push the piston downward. But when the mixture has been leaned excessively, the fuel / air mixture in the cylinder burns too rapidly and in the wrong burn pattern. This can result in explosively high pressures building within the cylinder which / that can eventually damage the piston, valves, and cylinder assembly. Detonation can cause failure of these components which / that can result complete engine failure in severe cases. Through proper utilization in accordance with the manufacture's recommendations you can extend the engine's life and reduce your operating costs.

Ex. 54.

2. Fixed leading edge portion of airfoil is a wing or tailplane forming slot ahead of main surface.

3. The elevator trim tab is a small auxiliary control surface hinged at the trailing edge of the elevators.

4. The controls used to give the pilot longitudinal control around lateral axis are the elevators and elevator trim tabs.

5. Speed of the air passing over the wing and density of the air moving over the wing are among the factors that influence lift and drag.

6. Individual brakes installed on each main wheel permit the pilot to use brake individually as an aid to steering.

7. The tricycle landing gear produced today is used on most airplanes.

8. All commercial airplanes moving over the world's major landmasses are under positive air traffic control.

9. The amount of air pumped down for a Boeing 747 to create lift for its roughly 8000,000 pounds take off weight is incredible indeed.

10. The goal of airplane designers is to obtain maximum efficiency combined with adequate strength.

Ex. 55.

2. Each aircraft needs airworthiness certificate after coming out of the factory.

3. While approaching an airfield it is necessary to look at warning indicators, which indicate whether the wheels are extended or retracted.

4. When remembering a few general principals of engine operation the pilot can avoid engine failures

5. While planning the flight properly it is always possible for a pilot to make mistakes.

6. Designers and manufactures are trying to improve the performance of the aircraft by increasing its speed.

7. By changing the angle of attack of the horizontal stabilizer the pilot avoided the accident.

8. While using the elliptical wing you should remember that it provides greater lift for the amount of drag, but doesn't have as good stall characteristics as the rectangular wing.

Ex. 56.

2. The turns are normally to the right but there is some change above a certain flight level.

3. An offset VOR / DME pattern can be established along an inbound radial or it can be along an outbound radial.

4. The runway - in- use is selected with regard for wind strength and direction, and normally a pilot will expect to lend or take off as nearly to the wind as possible.

5. All of our pretake off engine and cockpit checks have been completed so we are ready to take off.

6. You should personally visit a control tower before you take your private pilot flight test.

7. We'll land on the runway after the tower clears us to land.

8. If a radar directed circuit is flown, the terms *downwind, base leg, and final* are used where necessary, although the area of sky covered is far bigger than in the normal visual traffic.

Ex. 57.

2. An aircraft must be identified before it can receive a radar control.

3. Precision Approach Radar (PAR) is nowadays confined mainly to military ATC but it is still in common use at civil airports in Russia.

4. Subsequent landing aircraft are vectored not less than five miles behind; although, at certain locations reduction of the separation to three miles is authorized to ensure maximum utilization of the arrival runway.

5. A landing clearance may be given at the marked juncture but it is more useful to give it at the four-mile range.

6. A busy traffic situation often exists, so it might be necessary to put the arriving aircraft into the holding pattern based upon a radio beacon.

7. Airways flights will be transferred to the ACC after they have been separated from any conflicting traffic by Approach or Departure Control.

8. The first aircraft will descend from the lowest level of the holding stack and commence its approach when instructed, whereas the second aircraft in the approach sequence may be told to descend to the level previously occupied by the first one.

9. At many controlled airports the standard join is not used and aircraft are authorized to join directly onto final, base, or downwind.

10. ICAO allows landing clearance to be issued when the proper separation will exist when the aircraft crosses the RW threshold; however, it must not be issued until the preceding landing aircraft has crossed the RW threshold.

Appendix II

Key to stop and checks

Stop and check I. NOUNS, ARTICLES

Номер вопроса	1	2	3	4	5	6	7	8	9	10	11	12
Правильный ответ	c	a	c	b	c	c	c	b	a	b	b	c

Stop and check II. ADJECTIVES

Номер вопроса	1	2	3	4	5	6	7	8	9	10	11	12
Правильный ответ	c	c	b	a	b	a	b	c	c	c	c	b

Stop and check III. PRESENT TENSES

Номер вопроса	1	2	3	4	5	6	7	8	9	10	11	12
Правильный ответ	b	c	a	b	c	a	b	c	c	b	c	b

Stop and check IV. PAST TENSES

Номер вопроса	1	2	3	4	5	6	7	8	9	10	11	12
Правильный ответ	c	c	a	c	b	b	c	b	b	c	a	c

Stop and check V. FUTURE ACTIONS

Номер вопроса	1	2	3	4	5	6	7	8	9	10	11	12
Правильный ответ	c	b	c	b	c	a	c	c	b	c	a	a

Stop and check VI. FERUND OR INFINITIVE

Номер вопроса	1	2	3	4	5	6	7	8	9	10	11	12
Правильный ответ	b	a	c	c	a	b	c	b	b	c	b	c

Stop and check VII. MODALS

Номер вопроса	1	2	3	4	5	6	7	8	9	10	11	12
Правильный ответ	c	c	a	c	b	c	c	c	a	c	b	b

Stop and check VIII. PASSIVES

Номер вопроса	1	2	3	4	5	6	7	8	9	10	11	12
Правильный ответ	c	a	b	b	c	b	a	b	c	a	c	b

Stop and check IX. RELATIVE AND PARTICIPLE CLAUSES

Номер вопроса	1	2	3	4	5	6	7	8	9	10	11	12
Правильный ответ	b	c	c	b	c	c	b	b	a	a / b	b	c

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