

NATIONAL AVIATION UNIVERSITY  
Educational and Research Institute of the Humanities  
Department of Foreign Languages for Professional Purposes

APPROVED  
Vice-Rector for Academics  
and Educative Activity

"\_\_\_\_\_" "\_\_\_\_\_" 2017 p



**Quality Management System**

**COMPLEX TEST PACKAGE**

Field of study: 14 « Electrical Engineering »  
Speciality: 142 « Power Machinery »  
Specialization: «Gas Turbine Plants and Compressor Stations

QMS CTP 12.01.02 (03) – 01 - 2017

Recommended by  
the Scientific-Methodological-Editorial Board  
of the Humanities Institute

Record № \_\_\_\_\_  
of «\_\_\_\_\_» \_\_\_\_\_ 2017

Head of the SMEB

\_\_\_\_\_ S. Yahodzinskyi

(signature, name)

National Aviation University  
Educational and Research Institute of the Humanities  
Department of Foreign Languages for Specific Purposes

AGREED

Director of the Educational  
and Research Institute of Humanities

\_\_\_\_\_ A.Hudmanian  
(signature) (name)

«\_\_\_\_\_» \_\_\_\_\_ 2017

**Complex Test Package  
on the subject**

\_\_\_\_\_ “Professional Foreign Language” \_\_\_\_\_  
(title of the subject)

\_\_\_\_\_ 142 “Power Machinery” \_\_\_\_\_  
(code and title of the field of study)

Complex Test Package reviewed by Aeroengines Department  
Speciality 142 “Power Machinery”

Record № \_\_\_\_\_ of “ \_\_\_\_\_ ” \_\_\_\_\_ 20 \_\_\_\_\_

Head of the Department for Speciality  
142 “Power Machinery”

\_\_\_\_\_ M. Kulyk  
(signature) (name)

“ \_\_\_\_\_ ” \_\_\_\_\_ 20 \_\_\_\_\_

## List of the academic staff developing the Complex Test Package

The Complex Test Package on the subject “Professional Foreign Language”

for speciality 142 “Power Machinery”

was developed by:

G.Maksymovich, senior lecturer

(name, position, scientific degree, academic rank)

1-30

(variant №)

\_\_\_\_\_  
(signature)

The Complex Test Package was approved by  
the Foreign Languages for Specific Purposes Department

Record № \_\_\_\_ of “\_\_\_\_” \_\_\_\_ 20\_\_

Head of the Department \_\_\_\_\_

(signature)

O.Akmaldinova

(name)

## **Expert Review of the Complex Test Package**

on the subject \_\_\_\_\_ “ Professional Foreign Language” \_\_\_\_\_  
speciality \_\_\_\_\_ 142 “Power Machinery” \_\_\_\_\_

The subject “Professional Foreign language” is in the list of professionally oriented subjects that form the professional bachelors level of 142 “Power Machinery” speciality. The complex test package consists of thirty variants. The complex tests are developed in accordance with course training program on the subject “Professional Foreign Language” for speciality 142 “Power Machinery”. The tasks of the test allow verifying a wide range skills and knowledge of students: grammar and professional translation skills, the ability to express the own opinion in written form and to use professional or everyday English. The tasks embrace the main topics in computer science and engineering: “Energy supply. Gas Transmission System and its Components”, “Compressors. Types of Compressors. Compressor Stations”, “Turbines. Types of Turbines”, “Energy Saving. Environmental Protection”. All complex test variants are equal. Each complex test variant consists of three tasks and covers all course training program material. The tasks are based on professional terms. They are oriented on bachelor degree training requirements for speciality 142 “Power Machinery”.

The complex test package is oriented on rather high level of foreign language among the specialists with bachelor degree. Assessment criteria and the list of reference literature are well founded.

In general, the complex test package is composed according to the defined requirements. They are capable of providing high quality verification of students’ skills and knowledge on the subject “ Professional Foreign Language” for speciality 142 “Power Machinery”.

Head of the Aeroengines  
Department \_\_\_\_\_

M. Kulyk

\_\_\_\_\_ ( date)

**ASSESSMENT CRITERIA**  
**for the Complex Test**  
**on the subject « Professional Foreign Language»**

The level of undergraduate (graduate) students' professional knowledge and skills shown in the Complex Test on the subject Professional Foreign Language is assessed by a 12-grade scale (Table 1).

Table 1

Full and correct answer	Maximum total score	Assignment 1	Assignment 2	Assignment 3
Assignments 1-30	12	5	4	3

Correspondence between Grades for certain assignments of the Complex Test and the National Scale is shown in Table 2.

Table 2

Grades			National Scale
Assignment 1	Assignment 2	Assignment 3	
5	4	3	Excellent
4	3	2.5	Good
3	2	2	Satisfactory
Below 3	Below 2	Below 2	Poor

Correspondence between Total Grades for the Complex Test assignments and the National Scale is shown in Table 3.

Table 3

Correspondence between Grades for the Complex Test assignments and the National Scale

Grades	National Scale	Assessment criteria
11-12	Excellent	EXCELLENT – excellent performance with insignificant shortcomings
10	Good	VERY GOOD – performance above the average standard with a few mistakes
9		GOOD – good performance altogether with a certain number of significant mistakes
8	Satisfactory	SATISFACTORY – fair but with significant shortcomings
7		SUFFICIENT – performance meets the minimum criteria
Below 7	Poor	FAIL – some more work required before the credit can be awarded

senior lecturer \_\_\_\_\_  
(position of the staff member  
who developed the Test)

\_\_\_\_\_ (signature)

G.Maksymovich  
(name)

\_\_\_\_\_ (date)

**List of reference literature  
that may be used during the Complex Test performance**

1. Hornby A.S., Oxford Advanced Learner's Dictionary of Current English. Oxford University Press, 2000.
2. Англо-русский словарь по гражданской авиации/ В.П. Марасанов. – М. : Скорпион-Россия, 1996. – 560с.

senior lecturer  
(position of the staff member  
who developed the Test)

\_\_\_\_\_  
(signature)

G.Maksymovich  
(name)

\_\_\_\_\_  
(date)

**NATIONAL AVIATION UNIVERSITY**  
Educational and Research Institute of the Humanities  
Department of Foreign Languages for Professional Purposes

Speciality 142 "Power Machinery"

Subject " Professional Foreign Language"

**COMPLEX TEST**

**VARIANT № 1**

1. *Give a written translation of the text.*

Natural gas is highly pressurized as it travels through an interstate pipeline.. This is accomplished by compressor stations. Some compressor stations are operated by using an electric motor to turn the same type of centrifugal compressor. The natural gas enters the compressor station where it is compressed by either a turbine, motor or engine. So, compressor stations comprise compressor shops, equipped with gas compressor units of various types, such as: gas turbine driven, electrically driven and reciprocating compressors. Turbine compressors gain their energy by using a small proportion of the natural gas that they compress. The turbine itself serves to operate a centrifugal compressor, which contains a type of fan that compresses and pumps the natural gas through the pipeline.

2. *Make 5 types of questions to the sentence.*

Natural gas travels through an interstate pipeline.

3. *Translate the sentences into English.*

1. Природний газ – це газоподібне викопне паливо.
2. Природний газ в основному складається з метану.
3. Перш ніж газ можна буде використовувати як паливо, він зазнає інтенсивної переробки.
4. Природний газ – це задушлива отруйна речовина, що витісняє вміст кисню у повітрі.
5. Природний газ може бути небезпечним через свої вибухові властивості.

**Head of the Department**

O.Akmaldinova

(signature) (name)

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**NATIONAL AVIATION UNIVERSITY**  
Educational and Research Institute of the Humanities  
Department of Foreign Languages for Professional Purposes

Speciality 142 “Power Machinery”

Subject “ Professional Foreign Language”

**COMPLEX TEST**

**VARIANT № 2**

1. *Give a written translation of the text.*

The turbine itself serves to operate a centrifugal compressor, which contains a type of fan that compresses and pumps the natural gas through the pipeline. Some compressor stations are operated by using an electric motor to turn the same type of centrifugal compressor. This type of compression does not require the use of any of the natural gas from the pipe, however it does require a reliable source of electricity nearby. Reciprocating natural gas engines are also used to power some compressor stations. These engines resemble a very large automobile engine and are powered by natural gas from the pipeline. The combustion of the gas powers pistons on the outside of the engine, which serves to compress the natural gas.

2. *Make 5 types of questions to the sentence.*

Some compressor stations are operated by using an electric motor.

3. *Translate the sentences into English.*

1. Газопереробні заводи використовуються для очищення сировинного природного газу.

2. Очищений природний газ, який використовується мешканцями будинків, комерційними і промисловими споживачами, є майже чистим метаном.

3. Очищення сировинного природного газу повинно відповідати стандартам якості, визначеним більшістю транспортних і розподільчих компаній.

4. Природний газовий конденсат називають також природним бензином або просто конденсатом.

5. Вугільний газ видобувають з метанових родовищ у свердловинах вугільних пластів.

**Head of the Department**

О.Акмалдінова

(signature) (name)

“ ” 20



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Field of Study 6.050604 “ Power Machine Building ”

Subject “ Professional Foreign Language ”

**COMPLEX TEST**

**VARIANT № 3**

1. *Give a written translation of the text.*

The natural gas enters the compressor station where it is compressed by either a turbine, motor or engine. So, compressor stations comprise compressor shops, equipped with gas compressor units of various types, such as: gas turbine driven, electrically driven and reciprocating compressors. Turbine compressors gain their energy by using a small proportion of the natural gas that they compress. The turbine itself serves to operate a centrifugal compressor, which contains a type of fan that compresses and pumps the natural gas through the pipeline. Some compressor stations are operated by using an electric motor to turn the same type of centrifugal compressor. This type of compression does not require the use of any of the natural gas from the pipe, however it does require a reliable source of electricity nearby.

2. *Make 5 types of questions to the sentence.*

The natural gas is compressed by either a turbine, motor or engine.

3. *Translate the sentences into English.*

1. Очищений природний газ є майже чистим метаном.
2. Перш ніж газ можна буде використовувати як паливо, він зазнає інтенсивної переробки.
3. Природний газ може бути небезпечним через свої вибухові властивості.
4. Очищення сировинного природного газу повинно відповідати стандартам якості, визначеним більшістю транспортних і розподільчих компаній.
5. Природний газовий конденсат називають також природним бензином або просто конденсатом.

**Head of the Department**

O.Akmalidina  
(signature) (name)  
“ ” 20

**National Aviation University**

Humanities Institute  
Department of Foreign Languages for Specific Purposes

Field of Study 6.050604 “ Power Machine Building ”

Subject “ Professional Foreign Language”

**COMPLEX TEST****VARIANT № 4***1. Give a written translation of the text.*

Compressor stations comprise compressor shops, equipped with gas compressor units of various types, such as: gas turbine driven, electrically driven and reciprocating compressors. Turbine compressors gain their energy by using a small proportion of the natural gas that they compress. The turbine itself serves to operate a centrifugal compressor, which contains a type of fan that compresses and pumps the natural gas through the pipeline. Some compressor stations are operated by using an electric motor to turn the same type of centrifugal compressor. This type of compression does not require the use of any of the natural gas from the pipe, however it does require a reliable source of electricity nearby. Reciprocating natural gas engines are also used to power some compressor stations.

*2. Make 5 types of questions to the sentence.*

Compressor shops are equipped with gas compressor units of various types.

*3. Translate the sentences into English.*

1. Природний газ може бути небезпечним через свої вибухові властивості.
2. Природний газ – це газоподібне викопне паливо.
3. Природний газовий конденсат називають також природним бензином.
4. Газопереробні заводи використовуються для очищення сировинного природного газу.
5. Очищений природний газ використовується мешканцями будинків, комерційними і промисловими споживачами.

**Head of the Department**

O.Akmaldinova

(signature) (name)

“ ” 20

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 Humanities Institute  
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Subject “ Professional Foreign Language”

## COMPLEX TEST

### VARIANT № 5

1. *Give a written translation of the text.*

Natural gas processing plants are used to purify the raw natural gas extracted from underground gas fields and brought up to the surface by gas wells. The processed natural gas, used as a fuel by residential, commercial and industrial consumers, is almost pure methane and is very much different from the raw natural gas.

The raw natural gas must be purified to meet the quality standards specified by the major pipeline transmission and distribution companies. Those quality standards vary from pipeline to pipeline and are usually a function of a pipeline system design and the markets. Raw natural gas comes primarily from any one of three types of wells: crude oil wells, gas wells and condensate wells.

2. *Make 5 types of questions to the sentence.*

The raw natural gas extracted from underground gas fields

3. *Translate the sentences into English.*

1. Природний газ – це газоподібне викопне паливо.
2. Газопереробні заводи використовуються для очищення сировинного природного газу.
3. Очищений природний газ використовується мешканцями будинків, комерційними і промисловими споживачами.
4. Природний газ може бути небезпечним через свої вибухові властивості.
5. Очищений природний газ використовується мешканцями будинків, комерційними і промисловими споживачами.

**Head of the Department**

\_\_\_\_\_  
 (signature) (name) O.Akmaldinova  
 “ ” \_\_\_\_\_ 20\_\_

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 Humanities Institute  
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Field of Study 6.050604 “ Power Machine Building ”

Subject “ Professional Foreign Language”

## COMPLEX TEST

### VARIANT № 6

1. *Give a written translation of the text.*

The efficient and effective movement of natural gas from producing regions to consumption regions requires an extensive and elaborate transportation system. In many instances, natural gas produced from a particular well will have to travel a great distance to reach its point of use. The transportation system for natural gas consists of a complex network of pipelines, designed to quickly and efficiently transport natural gas from its origin to areas of high natural gas demand. Transportation of natural gas is closely linked to its storage; should the natural gas being transported not be required at that time, it can be put into storage facilities. There are essentially three major types of pipelines along the transportation route: the gathering system, the interstate pipeline, and the distribution system.

2. *Make 5 types of questions to the sentence.*

The transportation system consists of a complex network of pipelines.

3. *Translate the sentences into English.*

1. Мережа трубопроводів включає магістральні трубопроводи, відгалуження, газорозподільчі станції, компресорні станції та газосховища.
2. Трубопровідний транспорт використовується для перекачування нафти, нафтопродуктів, газу, а також деяких хімічних продуктів.
3. Від ефективної роботи газотранспортної системи України залежить не лише її власний добробут, але й енергетична безпека Європейського Союзу.
4. На сьогодні Україна є найбільшим у світі транспортувальником природного газу.
5. Газопроводи України мають внутрішньо-державне та міждержавне значення.

**Head of the Department**

О.Акмалдінова

(signature) (name)

“ ” \_\_\_\_\_ 20\_\_

**National Aviation University**  
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Field of Study 6.050604 “ Power Machine Building ”

Subject “ Professional Foreign Language ”

**COMPLEX TEST**

**VARIANT № 7**

1. *Give a written translation of the text.*

Gradually, gas becomes a major energy source for the country's economy. Presently its share in consumption of primary energy sources has reached 45 %. The main gas consumers are the leading industries including the power generating, metallurgy, chemical and machine building sectors.

Maintenance of gas mains, technical supervision of new construction and overhauls of operational gas pipelines are performed by 40 local services, gas mains departments and 9 service departments for underground gas storage. To ensure reliable and long-term operation of gas transmission system and in order to protect underground gas transmission facilities against ground and stray-current corrosion main gas pipelines are covered with bituminous insulation with mineral filling.

2. *Make 5 types of questions to the sentence.*

Gas becomes a major energy source for the country's economy.

3. *Translate the sentences into English.*

1. Очищений природний газ використовується мешканцями будинків, комерційними і промисловими споживачами.

2. Природний газ – це газоподібне викопне паливо.

3. Природний газ може бути небезпечним через свої вибухові властивості.

4. Мережа трубопроводів включає магістральні трубопроводи, відгалуження, газорозподільчі станції, компресорні станції та газосховища.

5. Трубопровідний транспорт використовується для перекачування нафти, нафтопродуктів, газу, а також деяких хімічних продуктів.

**Head of the Department**

О.Акмалдінова

(signature) (name)

“ ” \_\_\_\_\_ 20\_\_



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Department of Foreign Languages for Specific Purposes

Field of Study 6.050604 “ Power Machine Building ”  
Subject “ Professional Foreign Language ”

**COMPLEX TEST**

**VARIANT № 9**

1. *Give a written translation of the text.*

In addition to compressing natural gas, compressor stations also usually contain some type of liquid separator, much like the ones used to dehydrate natural gas during its processing. Usually, these separators consist of scrubbers and filters that capture any liquids or other undesirable particles from the natural gas in the pipeline. Although natural gas in the pipeline is considered ‘dry’ gas, the liquid separators at compressor stations ensure that the natural gas in the pipeline is as pure as possible and usually filter the gas prior to compressor. Interstate pipelines include a great number of valves along their entire length. These valves work like gateways. They are usually open and allow natural gas to flow freely, or they can be used to stop gas flow along a certain section of pipe.

2. *Make 5 types of questions to the sentence.*

Compressor stations also usually contain some type of liquid separator.

3. *Translate the sentences into English.*

1. Природний газ може бути небезпечним через свої вибухові властивості.
2. Природний газ – це газоподібне викопне паливо.
3. Природний газовий конденсат називають також природним бензином.
4. Газопереробні заводи використовуються для очищення сировинного природного газу.
5. Стискання природного газу є необхідним для трубопроводів.

**Head of the Department**

O.Akmaldinova  
(signature) (name)  
“ ” \_\_\_\_\_ 20\_\_

**National Aviation University**  
Humanities Institute  
Department of Foreign Languages for Specific Purposes

Field of Study 6.050604 “ Power Machine Building ”  
Subject “ Professional Foreign Language”

**COMPLEX TEST**

**VARIANT № 10**

*1. Give a written translation of the text.*

A gas compressor unit is a mechanical device that increases the pressure of a gas by reducing its volume. Compression of a gas naturally increases its temperature. Compressors are similar to pumps: both increase the pressure on a fluid and both can transport the fluid through a pipe. As gases are compressible, the compressor also reduces the volume of a gas.

Centrifugal compressors are used throughout industry because they have fewer rubbing parts. Centrifugal fan/blowers are more suited to continuous - duty applications such as ventilation fans, air movers, cooling units, and other uses that require high volume with little or no pressure increase. Axial-flow compressors use a series of fan-like rotor blades to progressively compress the gas flow.

*2. Make 5 types of questions to the sentence.*

Compression of a gas naturally increases its temperature.

*3. Translate the sentences into English.*

1. Осьовий компресор використовується у потужних газотурбінних двигунах.
2. Рідинні сепаратори на компресорних станціях надають впевненості у тому, що природний газ в трубопроводі максимально очищений.
3. Стискання природного газу є необхідним для трубопроводів.
4. Теплова енергія, отримана від згорання палива, перетворюється в корисну роботу.
5. Природний газ може бути небезпечним через свої вибухові властивості.

**Head of the Department**

O.Akmaldinova  
(signature)    (name)  
“ \_\_\_\_\_ ” \_\_\_\_\_ 20\_\_



**National Aviation University**  
Humanities Institute  
Department of Foreign Languages for Specific Purposes

Field of Study 6.050604 “ Power Machine Building ”

Subject “ Professional Foreign Language”

**COMPLEX TEST**

**VARIANT № 11**

1. *Give a written translation of the text.*

Centrifugal compressors are used throughout industry because they have fewer rubbing parts. Centrifugal fan/blowers are more suited to continuous - duty applications such as ventilation fans, air movers, cooling units, and other uses that require high volume with little or no pressure increase. Centrifugal compressors use a vaned rotating disk or impeller in a shaped housing to force the gas to the rim of the impeller, increasing the velocity of the gas. A diffuser converts the velocity energy to pressure energy. Axial-flow compressors use a series of fan-like rotor blades to progressively compress the gas flow. Stationary stator vanes redirect the flow onto the next set of rotor blades. Axial-flow compressors are normally used as a medium to large gas turbine engines. They are almost always multi-staged.

2. *Make 5 types of questions to the sentence.*

A diffuser converts the velocity energy to pressure energy.

3. *Translate the sentences into English.*

1. Природний газ надходить в компресорну станцію, де він стискається.
2. Процес згорання палива має проходити рівно та безперервно.
3. Стискання природного газу є необхідним для трубопроводів.
4. Теплова енергія, отримана від згорання палива, перетворюється в корисну роботу.
5. Природний газ може бути небезпечним через свої вибухові властивості.

**Head of the Department**

O.Akmaldinova  
(signature) (name)

“ ” \_\_\_\_\_ 20\_\_

**National Aviation University**  
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**COMPLEX TEST**

**VARIANT № 12**

1. *Give a written translation of the text.*

Reciprocating compressors use pistons driven by a crankshaft. They can be either stationary or portable, can be single or multi-staged, and can be driven by electric motors or internal combustion engines. Small reciprocating compressors from 5 to 30 horsepower (hp) are commonly seen in automotive applications and are typically for intermittent duty. Larger reciprocating compressors up to 1000 hp are still commonly found in large industrial applications, but their numbers are declining as they are replaced by various other types of compressors. In certain applications, such as air compression, multi-stage double-acting compressors are said to be the most efficient compressors and are typically larger, noisier and more costly than comparable rotary units.

2. *Make 5 types of questions to the sentence.*

Reciprocating compressors use pistons driven by a crankshaft.

3. *Translate the sentences into English.*

1. Теплова енергія, отримана від згорання палива, перетворюється в корисну роботу.
2. Природний газ може бути небезпечним через свої вибухові властивості.
3. Осьовий компресор використовується у потужних газотурбінних двигунах.
4. Рідинні сепаратори на компресорних станціях надають впевненості у тому, що природний газ в трубопроводі максимально очищений.
5. Стискання природного газу є необхідним для трубопроводів.

**Head of the Department**

O.Akmaldinova

(signature) (name)

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**National Aviation University**  
Humanities Institute  
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Field of Study 6.050604 "Power Machine Building"

Subject "Professional Foreign Language"

**COMPLEX TEST**

**VARIANT № 13**

1. *Give a written translation of the text.*

A diaphragm compressor (also known as a membrane compressor) is a variant of the conventional reciprocating compressor. The compression of gas occurs by the movement of a flexible membrane instead of an intake element. The back and forth movement of the membrane is driven by a rod and a crankshaft mechanism. Only the membrane and the compressor box come in touch with the gas being compressed. Diaphragm compressors are used for hydrogen and compressed natural gas (CNG) as well as in a number of other applications. Reciprocating compressors use pistons driven by a crankshaft. They can be either stationary or portable, can be single or multi-staged, and can be driven by electric motors or internal combustion engines.

2. *Make 5 types of questions to the sentence.*

Reciprocating compressors use pistons driven by a crankshaft.

3. *Translate the sentences into English.*

1. Теплова енергія, отримана від згорання палива, перетворюється в корисну роботу.
2. Природний газ може бути небезпечним через свої вибухові властивості.
3. Осьовий компресор використовується у потужних газотурбінних двигунах.
4. Рідинні сепаратори на компресорних станціях надають впевненості у тому, що природний газ в трубопроводі максимально очищений.
5. У будь-якому підземному сховищі природного газу існує певна його кількість, яка ніколи не відкачується.

**Head of the Department**

O.Akmaldinova

(signature) (name)

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## National Aviation University

Humanities Institute  
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Field of Study 6.050604 “ Power Machine Building ”  
Subject “ Professional Foreign Language ”

### COMPLEX TEST

#### VARIANT № 14

1. *Give a written translation of the text.*

Rotary screw compressors use two meshed rotating helical screws to force the gas into a smaller space. These are usually used for continuous operation in commercial and industrial applications and may be either stationary or portable. They are commonly seen with roadside repair crews powering air-tools. This type is also used for many automobile engine superchargers because it is easily matched to the induction capacity of a piston engine. Rotary vane compressors consist of a rotor with a number of blades inserted in radial slots in the rotor. The rotor blades slide in and out of slots, keeping contact with the outer wall of the housing. Rotary vane compressors and piston compressors are one of the oldest of compressor technologies

2. *Make 5 types of questions to the sentence.*

Rotary screw compressors are usually used for continuous operation in commercial and industrial applications .

3. *Translate the sentences into English.*

1. Рідинні сепаратори, як правило, фільтрують газ перед надходженням до компресора.
2. Дифузор перетворює швидкість енергії в енергію тиску.
3. Теплова енергія, отримана від згорання палива, перетворюється в корисну роботу.
4. Природний газ може бути небезпечним через свої вибухові властивості.
5. Осьовий компресор використовується у потужних газотурбінних двигунах.

**Head of the Department**

O.Akmaldinova

(signature) (name)

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**COMPLEX TEST**

**VARIANT № 16**

*1. Give a written translation of the text.*

There are many options for the “prime mover” or motor which powers the compressor. Gas turbines power the axial and centrifugal flow compressors that are part of jet engines. Steam turbines or water turbines are possible for large compressors. Electric motors are cheap and quiet for static compressors. Small motors are suitable for domestic electrical supplies using single phase alternating current. Larger motors can only be used where an industrial electrical three phase alternating current supply is available. Diesel engines or petrol engines are suitable for portable compressors and support compressors used as superchargers from their own crankshaft power.

*2. Make 5 types of questions to the sentence.*

Gas turbines power the axial and centrifugal flow compressors

*3. Translate the sentences into English.*

1. Процес згорання палива має проходити рівно та безперервно.
2. Природний газ надходить в компресорну станцію, де він стискається.
3. Стискання природного газу є необхідним для трубопроводів.
4. Теплова енергія, отримана від згорання палива, перетворюється в корисну роботу.
5. Природний газ може бути небезпечним через свої вибухові властивості.

**Head of the Department**

O.Akmaldinova

(signature) (name)

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**COMPLEX TEST**

**VARIANT № 17**

1. *Give a written translation of the text.*

Gas compressors are used in various applications where either higher pressures or lower volumes of gas are needed. A partial list of gas compressors applications includes:

- pipeline transport of purified natural gas to move the gas from the production site to the consumer;
- petroleum refineries, natural gas processing plants, petrochemical and chemical plants, and similar large industrial plants for compressing intermediate and end product gases;
- refrigeration and air conditioner equipment to move heat from one place to another in refrigerant cycles;
- gas turbine systems to compress the intake combustion air;
- many various industrial, manufacturing and building processes to power all types of pneumatic tools.

2. *Make 5 types of questions to the sentence.*

Small motors are suitable for domestic electrical supplies.

3. *Translate the sentences into English.*

1. У будь-якому підземному сховищі природного газу існує певна його кількість, яка ніколи не відкачується.
2. Природний газ може бути небезпечним через свої вибухові властивості.
3. Осьовий компресор використовується у потужних газотурбінних двигунах.
4. Рідинні сепаратори на компресорних станціях надають впевненості у тому, що природний газ в трубопроводі максимально очищений.
5. Процес згорання палива має проходити рівно та безперервно.

**Head of the Department**

\_\_\_\_\_ O.Akmaldinova  
(signature) (name)  
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Humanities Institute  
Department of Foreign Languages for Specific Purposes

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**COMPLEX TEST**

**VARIANT № 18**

1. *Give a written translation of the text.*

The principle greenhouse gases include water vapour, carbon dioxide, methane, nitrogen oxides, and some engineered chemicals such as chlorofluorocarbons. The reduction of greenhouse gas emissions has become a primary focus of environmental programs in countries around the world. One of the principle greenhouse gases is carbon dioxide. Although carbon dioxide does not trap heat as effectively as other greenhouse gases. The volume of carbon dioxide emissions into the atmosphere is very high, particularly from the burning of fossil fuels.

Reducing carbon dioxide emissions can play a huge role in combating the greenhouse effect and global warming. Natural gas is an extremely important source of energy for reducing pollution and maintaining a clean and healthy environment.

2. *Make 5 types of questions to the sentence.*

One of the principle greenhouse gases is carbon dioxide.

3. *Translate the sentences into English.*

1. Природний газ - найбільш чисте паливо серед інших видів викопного палива.
2. Природний газ може бути небезпечним через свої вибухові властивості.
3. Осьовий компресор використовується у потужних газотурбінних двигунах.
4. Стискання природного газу відбувається на компресорній станції.
5. Рідинні сепаратори, як правило, фільтрують газ перед надходженням до компресора.

**Head of the Department**

\_\_\_\_\_  
O.Akmaldinova  
(signature) (name)  
“ ” \_\_\_\_\_ 20\_\_\_\_



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## COMPLEX TEST

### VARIANT № 19

1. *Give a written translation of the text.*

Smog and poor air quality is a pressing environmental problem, particularly for large metropolitan cities. Smog is formed by a chemical reaction of carbon monoxide, nitrogen oxides, volatile organic compounds and heat from sunlight. Smog and ground level ozone can contribute to respiratory problems ranging from temporary discomfort to long-lasting permanent lung damage. Pollutants contributing to smog come from a variety of sources, including vehicle emissions, smokestack emissions, paints and solvents. As the reaction to create smog requires heat, smog problems are the worst in the summertime.

The use of natural gas does not contribute significantly to smog formation, as it emits low levels of nitrogen oxides and virtually no particulate matter.

2. *Make 5 types of questions to the sentence.*

Emissions from vehicles contribute to smog.

3. *Translate the sentences into English.*

1. Природний газ - це надзвичайно важливе джерело енергії щодо зменшення забруднення і збереження чистого і здорового оточуючого середовища.

2. Природний газ - найбільш чисте паливо серед інших видів викопного палива.

3. Основними продуктами згорання природного газу є вуглекислий газ та водяна пара.

4. Вугілля та нафта складаються з більш складних молекул, вищого коефіцієнту вмісту вуглецю, азоту та сірки.

5. При згоранні вугілля та нафти в оточуюче середовище потрапляють частинки попелу.

**Head of the Department**

\_\_\_\_\_  
 (signature) O.Akmaldinova  
 (name)  
 “ ” \_\_\_\_\_ 20\_\_

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**COMPLEX TEST**

**VARIANT № 20**

1. *Give a written translation of the text.*

Pollutant emissions from the industrial sector and electric utilities contribute greatly to environmental problems. The use of natural gas to power both industrial boilers and processes and the generation of electricity can significantly improve the emissions profiles for these two sectors. Essentially, electric generation and industrial applications that require energy, particularly for heating, use the combustion of fossil fuels for that energy. Because of its clean burning nature, the use of natural gas wherever possible can help to reduce the emission of harmful pollutants. The transportation sector (particularly cars, trucks, and buses) is one of the greatest contributors to air pollution.

2. *Make 5 types of questions to the sentence.*

Electric generation and industrial applications use the combustion of fossil fuels for that energy.

3. *Translate the sentences into English.*

1. Речовини, які не згорають, потрапляють в атмосферу, забруднюючи навколишнє середовище.
2. Глобальне потепління або парниковий ефект пов'язують із глобальними змінами клімату.
3. Обсяг викидів вуглекислого газу в атмосферу у процесі спалення викопного палива дуже високий.
4. Природний газ - найбільш чисте паливо серед інших видів викопного палива.
5. Основними продуктами згорання природного газу є вуглекислий газ та водяна пара.

**Head of the Department**

\_\_\_\_\_  
(signature)      O.Akmaldinova  
(name)  
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## COMPLEX TEST

### VARIANT № 21

1. *Give a written translation of the text.*

The transportation sector (particularly cars, trucks, and buses) is one of the greatest contributors to air pollution. Emissions from vehicles contribute to smog, low visibility, and various greenhouse gas emissions. Natural gas can be used in the transportation sector to cut down on these high levels of pollution from gasoline and diesel powered cars, trucks and buses. In fact, compared to traditional vehicles, vehicles operating on compressed natural gas have reductions in carbon monoxide emissions of 90 percent, and reductions in carbon dioxide emissions of 25 percent.

Natural gas is the cleanest of the fossil fuels and thus its many applications can serve to decrease harmful pollution levels in all sectors, particularly when used together with or replacing other fossil fuels.

2. *Make 5 types of questions to the sentence.*

Emissions from vehicles contribute to smog, low visibility, and various greenhouse gas emissions.

3. *Translate the sentences into English.*

1. Природний газ - найбільш чисте паливо серед інших видів викопного палива.
2. Основними продуктами згорання природного газу є вуглекислий газ та водяна пара.
3. Забруднюючі речовини сприяють утворенню смогу і погіршенню якості повітря.
4. Обсяг викидів вуглекислого газу в атмосферу у процесі спалення викопного палива дуже високий.
5. Природний газ використовують на транспорті, щоб обмежити високий рівень забруднення від бензину та дизпалива.

**Head of the Department**

О.Акмалдінова

(signature) (name)

“ ” \_\_\_\_\_ 20 \_\_\_\_\_

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Humanities Institute  
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**COMPLEX TEST**

**VARIANT № 22**

*1. Give a written translation of the text.*

Natural gas is an extremely important source of energy for reducing pollution and maintaining a clean and healthy environment. In addition being a domestically abundant and secure source of energy, the use of natural gas also offers a number of environmental benefits over other sources of energy, particularly other fossil fuels.

Natural gas is the cleanest of all the fossil fuels. Natural gas, emitting fewer harmful chemicals into the atmosphere than other fossil fuels, can help to mitigate some environmental issues. Global warming or the ‘greenhouse effect’ is an environmental issue that deals with the potential for global climate change due to increased levels of atmospheric ‘greenhouse gases’.

*2. Make 5 types of questions to the sentence.*

Natural gas is the cleanest of all the fossil fuels.

*3. Translate the sentences into English.*

1. Обсяг викидів вуглекислого газу в атмосферу у процесі спалення викопного палива дуже високий.
2. Природний газ - найбільш чисте паливо серед інших видів викопного палива.
3. Основними продуктами згорання природного газу є вуглекислий газ та водяна пара.
4. Глобальне потепління або парниковий ефект пов’язують із глобальними змінами клімату.
5. Речовини, які не згорають, потрапляють в атмосферу, забруднюючи навколишнє середовище.

**Head of the Department**

\_\_\_\_\_  
(signature) (name)  
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**COMPLEX TEST**

**VARIANT № 23**

1. *Give a written translation of the text.*

Acid rain is another environmental problem damaging crops, forests, wildlife populations, and causing respiratory and other illnesses in humans. The principle source of acid rain causing pollutants is coal fired power plants. Since natural gas emits virtually no sulfur dioxide, and up to 80 percent less nitrogen oxides than the combustion of coal, increased use of natural gas could provide for fewer acid rain causing emissions.

Pollutant emissions from the industrial sector and electric utilities contribute greatly to environmental problems. The use of natural gas to power both industrial boilers and processes and the generation of electricity can significantly improve the emissions profiles for these two sectors.

2. *Make 5 types of questions to the sentence.*

Natural gas emits fewer harmful chemicals into the atmosphere.

3. *Translate the sentences into English.*

1. Основними продуктами згорання природного газу є вуглекислий газ та водяна пара.

2. Глобальне потепління або парниковий ефект пов'язують із глобальними змінами клімату.

3. Природний газ - це надзвичайно важливе джерело енергії щодо зменшення забруднення і збереження чистого і здорового оточуючого середовища.

4. Природний газ - найбільш чисте паливо серед інших видів викопного палива.

5. Основними продуктами згорання природного газу є вуглекислий газ та водяна пара.

**Head of the Department**

O.Akmaldinova

(signature)

(name)

“ ” \_\_\_\_\_ 20 \_\_\_\_\_

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 Department of Foreign Languages for Specific Purposes

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## COMPLEX TEST

### VARIANT № 24

1. *Give a written translation of the text.*

Pollutants contributing to smog come from a variety of sources, including vehicle emissions, smokestack emissions, paints and solvents. As the reaction to create smog requires heat, smog problems are the worst in the summertime.

The use of natural gas does not contribute significantly to smog formation, as it emits low levels of nitrogen oxides and virtually no particulate matter. For this reason, it can be used to help combat smog formation in those areas where ground level air quality is poor. The main sources of nitrogen oxides are electric utilities, motor vehicles and industrial plants. Increased natural gas use in the electric generation sector could serve to combat smog production especially in urban centers.

2. *Make 5 types of questions to the sentence.*

Smog and poor air quality is a pressing environmental problem.

3. *Translate the sentences into English.*

1. Природний газ - це надзвичайно важливе джерело енергії щодо зменшення забруднення і збереження чистого і здорового оточуючого середовища.
2. Природний газ - найбільш чисте паливо серед інших видів викопного палива.
3. Основними продуктами згорання природного газу є вуглекислий газ та водяна пара.
4. Речовини, які не згорають, потрапляють в атмосферу, забруднюючи навколишнє середовище.
5. Глобальне потепління або парниковий ефект пов'язують із глобальними змінами клімату завдяки підвищенню рівня атмосферних парникових газів.

**Head of the Department**

\_\_\_\_\_  
 (signature)                      O.Akmaldinova  
 (name)  
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**National Aviation University**

Humanities Institute

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**COMPLEX TEST**

**VARIANT № 25**

*1. Give a written translation of the text.*

Some of the energy we can use is called renewable energy. These include solar, wind, geothermal and hydro. These types of energy are constantly being renewed or restored. But many of the other forms of energy we use in our homes and cars are not being replenished. Fossil fuels took millions of years to create. They cannot be made over night. And there are finite or limited amounts of these non-renewable energy sources. That means they cannot be renewed or replenished. Once they are gone, they cannot be used again. So, we must all do our part in saving as much energy as we can. In your home you can save energy by turning off home appliances, putting insulation in walls and attics.

*2. Make 5 types of questions to the sentence.*

Fossil fuels cannot be made over night.

*3. Translate the sentences into English.*

1. Автомобіль, відрегульований належним чином, споживає менше палива і не спричиняє надмірне забруднення довкілля.
2. Енергетично неефективні процеси спричиняють забруднення навколишнього середовища, що, в свою чергу, призводить до глобальних кліматичних змін.
3. Переробка використаних матеріалів потребує менше енергії, ніж створення нових.
4. Підприємці можуть збільшити прибуток за рахунок зменшення енергоспоживання.
5. Виробництво електроенергії може бути значною мірою збільшено шляхом залучення альтернативних видів палива.

**Head of the Department**

O. Akmalidzina  
(signature) (name)  
“ ” 20





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**COMPLEX TEST**

**VARIANT № 27**

1. *Give a written translation of the text.*

Energy Conservation is the economic practice and methods of reducing energy consumption, usually by identification of those processes that are energy-inefficient and providing alternative solutions. The term can also be used to describe the conservation of non-renewable resources such as coal, oil, and natural gas by increasing the efficiency of related processes, or finding alternatives so that existing stocks are depleted at a slower rate. Energy conservation is done in two ways:

- increasing energy efficiency to output the same level of goods and services with a small amount of input energy;
- decreasing the amount of a certain activity, or reducing the quality of a service to reduce the amount of energy needed.

2. *Make 5 types of questions to the sentence.*

We must all recycle as much as we can.

3. *Translate the sentences into English.*

1. Енергетично неефективні процеси спричиняють забруднення навколишнього середовища, що, в свою чергу, призводить до глобальних кліматичних змін.
2. Переробка використаних матеріалів потребує менше енергії, ніж створення нових.
3. Кожен має зробити свій внесок в економію електроенергії.
4. Глобальне потепління або парниковий ефект пов'язують із глобальними змінами клімату.
5. Споживачі енергії постійно дбають про енергоефективність, яка може бути досягнена декількома шляхами.

**Head of the Department**

О.Акмалдінова

(signature) (name)

“ ” \_\_\_\_\_ 20\_\_

**National Aviation University**

Humanities Institute  
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**COMPLEX TEST****VARIANT № 28**

1. *Give a written translation of the text.*

Renewable energy include solar, wind, geothermal and hydro. These types of energy are constantly being renewed or restored. But many of the other forms of energy we use in our homes and cars are not being replenished. Fossil fuels took millions of years to create. They cannot be made over night. And there are finite or limited amounts of these non-renewable energy sources. That means they cannot be renewed or replenished. Once they are gone, they cannot be used again. So, we must all do our part in saving as much energy as we can. In your home you can save energy by turning off home appliances, putting insulation in walls and attics.

2. *Make 5 types of questions to the sentence.*

Inefficient energy increases the negative impact on the environment.

3. *Translate the sentences into English.*

1. Кожен має зробити свій внесок в економію електроенергії.
2. Глобальне потепління або парниковий ефект пов'язують із глобальними змінами клімату.
3. Переробка використаних матеріалів потребує менше енергії, ніж створення нових.
4. Вчені вже розробили принципово нові ізоляційні матеріали, які захищають від дуже високих та низьких температур.
5. Автомобіль, відрегульований належним чином, споживає менше палива і не спричиняє надмірне забруднення довкілля.

**Head of the Department**

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 (signature) (name)  
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**COMPLEX TEST****VARIANT № 30***1. Give a written translation of the text.*

The internal combustion engine is an engine in which the combustion of a fuel (generally, fossil fuel) occurs with an oxidizer (usually air) in a combustion chamber. In an internal combustion engine, the expansion of the high temperature and pressure gases, which are produced by the combustion, directly applies force to a movable component of the engine, such as the piston or turbine blades, and, by moving it over a distance, generates useful mechanical energy. The term internal combustion engine usually refers to engines in which combustion is intermittent, such as the more familiar four-stroke and two-stroke piston engines. A second class of internal combustion engines includes continuous combustion gas turbines, jet engines and most rocket engines.

*2. Make 5 types of questions to the sentence.*

The internal combustion engine is quite different from external combustion engines, such as steam engines.

*3. Translate the sentences into English.*

1. Літаки використовують насоси з приводом від двигуна і насоси електромотора.
2. Закон, сформульований Паскалем, є діючим тільки за умови, що сила тяжіння не враховується.
3. Підвищення температури призводить до розширення рідини.
4. Закон, сформульований Паскалем, є діючим тільки за умови, що сила тяжіння не враховується.
5. Згоряння палива відбувається в камері згоряння завдяки окиснику, яким є повітря.

**Head of the Department**

O.Akmaldinova  
(signature) (name)  
“ ” 20

## National Aviation University

STAMP

### COMPLEX TEST

on the subject Professional Foreign Language

Student's name \_\_\_\_\_ year of study \_\_\_\_ academic group № \_\_\_\_\_

Institute Aerospace Institute

Department Aeroengines Department

Speciality 142 "Power Machinery"

Date of the Complex Test «\_\_\_\_» \_\_\_\_\_ 20\_\_\_\_

Variant № \_\_\_\_\_

Student's signature \_\_\_\_\_



