are used.
2. One should be careful when working with toxic substances.
3. Would you pass me that reference book?
4. If mercury didn't expand when heated, it wouldn't be used for taking temperatures.

III. Перепишите и переведите на русский язык следующие предложения, обращая внимание на значения выделенных слов.

1. The results are remarkable **provided** all figures have been checked.
2. The way the particles pack depends not **only** on their physical properties.
3. Isotops occur **either** naturally **or** they can be manufactured artificially.
4. It is **the only** metal which can be used in this device.

IV. Перепишите и письменно переведите на русский язык следующий текст.

**Filtration**

The separation of solids from a suspension in a liquid by means of a porous medium or screen[1] which retains the solids and allows the liquid to pass is termed filtration. In the chemical laboratory filtration is often carried out in a conical funnel[2] fitted with a filter paper. In the industrial equipment of such an operation difficulties are involved in the mechanical handling[3] of much larger quantities of suspension and solids. A thicker layer of solids has to form and, in order to achieve a high rate of passage of liquid through the solids, higher pressures will be needed and it will be necessary to provide a far greater area.

A typical filtration operation uses the filter medium, the support and the layer of solids or filter cake[4].

The volumes of the suspensions to be handled will vary from the extremely large quantities involved, in water purification, for example, to relatively small quantities in the fine chemical industry where the variety of solids will be considerable. In most instances it is the solids that are wanted and their physical size and properties are of paramount importance.

Filtration is essentially a mechanical operation and is less demanding in energy than evaporation or drying where high latent heat of the liquid



which is usually water, has to be provided.(1346)

[1] screen- сито
[2] funnel-воронка
[3] handling- 1)транспортировка, 2) погрузочно-разгрузочные операции
[4] filter cake-осадок от фильтрования

**Контрольная работа №5**

Чтобы правильно выполнить задание №5, необходимо повторить следующие разделы курса английского языка по рекомендованному учебнику:

1. Формы и функции инфинитива.
2. Грамматические функции глаголов should, would.
3. Различные значения слов: provided, either ... or, neither ... nor, both ... and, the only.

| АНГЛИЙСКИЙ ВАРИАНТ | ПЕРЕВОД |
|---|---|
| Образец выполнения к упр. 1 | |
| This is an article **to be translated** into English. | Эта статья, которую нужно перевести на английский язык. |
| Образец выполнения к упр. 2 | |
| We decided that we **should** meet in February. | Мы решили, что встретимся в феврале. |
| If it were my book, I **should** give it to you. | Если бы это была моя книга, я бы дала ее вам. |
| Would you kindly help me. | Будьте любезны, помогите, пожалуйста. |
| Образец выполнения к упр. 3 | |
| She is **either** English **or** American. | Она или англичанка, или американка. |

**Контрольная работа №5**

ДЛЯ СТУДЕНТОВ ПТ специальностей и направлений: 260202 (270300); 260204 (270500); 260504 (270800); 260301 (270900); 260303 (271100); 240902

**Вариант 1** (для шифров, заканчивающихся на нечетные цифры)

I. Перепишите и переведите на русский язык следующие предложения, обращая внимание на функции инфинитива.

1. To grow the body must be supplied with sufficient food.



2. It was found that salting and drying helped to preserve meat and fish.
3. All nutrients to be carried to cells are transported by blood plasma.
4. To understand the role of vitamins is very important for scientists working in this field.

II. Перепишите и переведите на русский язык следующие предложения, обращая внимание на различные значения глаголов should и would.

1. If I were you, I would use this method once more.
2. The job should be fulfilled by the end of the week.
3. I said that I should be delighted to accept their assistance.
4. He expected that he would be promoted.

III. Перепишите и переведите на русский язык следующие предложения, обращая внимание на значения выделенных слов.

1. **Either** he **or** you will have to go to London.
2. I can conduct the observation **provided** you help me.
3. He examined **only** the equipment.
4. By means of this instrument you can determine **both** chemical **and** physical properties of the substance.

IV. Перепишите и письменно переведите на русский язык следующий текст.

**Composition of Food**

Food is known to be necessary for any human being or any form of life. Food has three chief functions. First, it serves as fuel for the body, providing energy to support body activity; second, it furnishes the building material for formation, growth, maintenance and repair of body tissues; and third, it provides for the regulation of the body processes.

The word «food» is used to designate anything edible whether it is a natural product such as meat, eggs, milk, apples; a partially processed product such as flour, or cooked foods such as bread or cakes.

To be a highly qualified food engineer or food technologist one should be well acquainted with the composition of food, its properties and the utilization of food by the human body. Nearly all foods are mixtures of substances known as nutrients. Each nutrient has particular type of



chemical composition and performs at least one specific function when it is digested and absorbed in the body.

The essential constituents of food can be classified into six groups: proteins, fats, carbohydrates, vitamins, minerals and water. Proteins, fats and carbohydrates are used for providing energy to support body activity. They are also required for the formation, growth and replacement of tissues. Vitamins and mineral elements are necessary to regulate body processes, some of them being used for growth and replacement of tissues. Water serves as a vehicle for transporting food and waste products. It assists in regulating body temperature and takes part in many chemical reactions.

(1561)

**Вариант 2** (для шифров, заканчивающихся на четные цифры)

I. Перепишите и переведите на русский язык следующие предложения, обращая внимание на функции инфинитива.

1. To regulate body processes is one of the chief functions of vitamins.
2. A diet containing carbohydrate, fat, protein and minerals is sufficient to maintain health.
3. The amount of heat to be used for changing the temperature of a given substance depends upon its weight and its properties.
4. These methods are to be used to purify the substance.

II. Перепишите и переведите на русский язык следующие предложения, обращая внимание на различные значения глаголов should и would.

1. If there were no atmosphere, there would be neither clouds, nor rain.
2. Would you kindly help me?
3. I should have done this work, in case I had been informed before.
4. We were sure that we should produce a new food product.

III. Перепишите и переведите на русский язык следующие предложения, обращая внимание на значения выделенных слов.

1. The temperature will **either** slightly rise **or** drop.
2. **Provided** we know the rate of the emission, we will determine the range of the particles.

**Вариант 2** (для шифров, заканчивающихся на четные цифры)

Перепишите и письменно переведите на русский язык следующий текст.

**Separation of Solids**

The separation of solids is usually called sorting or classification. The process can be defined as the separation of mixtures into two or more fractions in such a way that each fraction is more uniform in one particular property than the original mixture. From this definition it follows that in order to obtain fractions that are uniform in more than one property, it may be necessary to apply more than one separation method. Although the purpose of sorting varies considerably it is generally used to obtain final products of good and uniform quality.

The sorting of raw materials is very important, particularly in the processing of cereals and seeds, vegetables and fruits, potatoes, fish, etc. The prime purpose is to remove foreign matter, defective material or inedible substances, and furthermore to classify according to size, color, ripeness or any other property concerning quality.

For example, disc separator has a horizontal axle on which a large number of circular discs are mounted. The discs are equipped with cavities on both sides and they rotate through the seed mixture. The advantage of this type of separator is that the active surface is very much larger. It can be used for the separation of round and oblong grains, and also frequently for the separation of broken wheat grains from whole ones.

Foreign matter is considered to include dirt. The cleaning of raw materials is very important for hygienic reasons. Large numbers of microorganisms are also removed with the dirt. The removal of pesticides is also becoming more and more important. Before the dirt can be removed it must be loosened. This sometimes can be done by shaking or by blowing air through the material; in other cases it is necessary to use washing machines.

There are many types of washing machines adapted to the materials to be cleaned.

Washing can be carried out by vigorous spraying with water, with the aid of shaking and stirring (mechanically or with air) and by other methods. The dirt usually differs so greatly from the product to be cleaned in certain properties that the actual separation is very simple.



**Контрольная работа №6**

ДЛЯ СТУДЕНТОВ ПТ специальностей и направлений: 260202 (270300); 260204 (270500); 260504 (270800); 260301 (270900); 260303 (271100); 240902

**Вариант 1** (для шифров, заканчивающихся на нечетные цифры)

**Food Processing by Heat Sterilization**

The canned food industry applies the principle that perishable foods can be preserved through proper application of heat process. Progress in canning has been continuous since about 1809 when H. Appert discovered that food could be preserved if it were placed in a sealed container and heated.

The manufacture of heat processed canned foods is known to cover operations that prepare raw products for packing in containers and operations involving the application of heat for sterilization, rendering the product free of spoilage microorganisms and enzymes. Heat processed canned food products include fruits, vegetables, meats and seafoods.

A can or a jar of canned food contains a sterilized product that at a room temperature will remain unspoiled indefinitely from a microbiological standpoint and, depending on the type of food, will have a shelf life from six months to two years. The majority of canned foods have been heat processed to prevent microbial and enzymatic spoilage. The terms «sterilized», «commercially sterilized» and «pasteurized» are used to describe heat processes.

When a product is sterilized, it is free of viable microorganisms. The term «commercial sterilization» describes the heat process given to canned foods which may contain viable spores of thermophilic[1] organisms and, therefore, are not truly sterile. The terms «sterile» and «sterilized» are used in this presentation to mean «commercially» sterile, which is defined as that degree of sterility at which all pathogenic and toxin-forming organisms have been destroyed, while the other more resistant types which, if present, could grow in the product and produce spoilage under normal storage conditions.

Pasteurization is a heat treatment that kills part, but not all the organisms present and usually involves the application of temperatures below 100°C. In pasteurized canned foods preservation is affected by a combination of a heat treatment and other factors such as a low pH, a high concentration of sugar or salt and storage at temperatures of 0 to 5°C. To evaluate heat process it is necessary to know the number of spoilage organisms present



and the thermal resistance characteristic of the spoilage organisms.

[1] termophilic bacteria — теплолюбивые бактерии.

**Вариант 2** (для шифров, заканчивающихся на четные цифры)

**Using Chemical Preservatives**

A large range of chemicals called preservatives can be used to control the growth of microorganisms. A food «preservative» is defined as a chemical compound or mixture of compounds applied for the specific purpose of preventing spoilage due to the growth of bacteria, yeasts or molds. These substances may be either added to the product or produced in it by fermentation.

Sugar is known to be the most important chemical food preservative. It preserves foods by inhibiting the growth of bacteria, yeasts and molds at concentrations of at least 65 per cent. The preservation in this case is believed to be effected by dehydration of the microorganisms. Naturally, to be effective sugar must be in solution. Many fruit products such as jams, jellies and syrups are preserved with sugar. However, except with candies, it is not possible to rely upon sugar alone for preservation. Although fruit products contain 65 to 75 per cent sugar, still it is customary to give them a mild heat treatment in a sealed container often in addition to air removal by vacuum. These supplemental processes help to control fermentation, surface molding and discoloration.

Second in importance, only to sugar, is salt. Salting or salting combined with drying is much used in the curing of meats, fish and some vegetables. Salt is antiseptic and it does not destroy all bacteria. Salt acts as a drying agent by withdrawing water. In salted, dried fish and meats bacterial and enzymic actions are stopped.

Addition of acids is another way of preserving foods, this method being carried out in one of two manners. The food may be pickled, i.e. soaked in an acid solution such as vinegar (acetic acid). Another method is to inoculate the food with a culture of selected bacteria and to rely on acid produced by the activities of these bacteria. For example, foods such as yoghurt and sauerkraut (fermented cabbage) are produced in this way.

Sulphur dioxide either in the form of a gas or soluble sulfite salts aids in the preservation of dried fruits and vegetables.



**Контрольная работа №6**

ДЛЯ СТУДЕНТОВ экономистов специальностей и направлений: 080000, 080500 (060800)

**Вариант 1** (для шифров, заканчивающихся на нечетные цифры)

**Microeconomics**

The word «micro» means small, microeconomics meaning economics in the small. The optimizing behaviour of individual units such as households and firms provides the foundation for microeconomics.

Microeconomists may investigate individual markets or even the economy as a whole, but their analyses are derived from the behaviour of individual units. Microeconomic theory is used extensively in many areas of applied economics. For example, it is used in industrial organization, labour economics, international trade and many other economic subfields.

The microeconomist is interested in the determination of individual prices and relative prices (i.e. exchange ratios[1] between goods).

Optimization plays a key role in microeconomics. The consumer is assumed to maximize utility or satisfaction constrained by income.

The producer is assumed to maximize profit or minimize cost of the technological constraints under which the firm operates. Optimization of social welfare sometimes is the criterion for the determination of public policy.

Opportunity cost[2] is an important concept in microeconomics. Many courses of action are valued in terms of what is sacrificed so that they might be undertaken. For example, the opportunity cost of a public project is the value of the additional goods that the private sector would have produced with the resources used for the public project.

[1] exchange ratio — ставка (соотношение) обмена, меновое отношение
[2] opportunity costs — альтернативные издержки

**Вариант 2** (для шифров, заканчивающихся на четные цифры)

**Macroeconomics**

The word «macroeconomics» means economics in the large. Macroeconomists are known to deal with such global questions as total production, total employment, the rate of economic growth, and so on. The