

Handling = treatment, touch	تعمیر کردن
spoilage = Decay of food	فساد غذایی
vector = mean of disease transfer	ناقل
wholesomeness = Healthiness	سالم بودن مواد غذایی
vulnerability = susceptibility	آسیب پذیری
Concern = worry	نگرانی
to preserve = to keep safe, to conserve	نگه داشتن - محافظت
Brine = water which is full of salt	محلول آب نمک غلیظ
to evolve = to be developed	فراگرفته شدن
to hasten = to accelerate	تسریع کردن
Glut = full amount	شماره انباشته
Inter Pretation = Explanation	تفسیر
quasi = to some degree	تا حدی
outstanding = Excellent	برخاسته / عالی
to destroy = to demolish	تخریب کردن
exposure = Location	در معرض
Aseptic = uninfected, uncontaminated	فراخورش
sophisticated = complex	پیشرفته - بسیار پیچیده

hasten تلفظ هاستن
Fasten, listen مثال

require = نیاز داشتن / اصرار کردن

facts = واقعیت Unit 1

Section One:
Reading Comprehension

dried خشک کردن

reports گزارش
able توانا
علم غذا و توسعه تاریخی آن

variety = تنوع
کوآلرل - تنوع

Food Science and Its Historical
technique روش Development

either = یکی یا دیگری
newly اخیراً

The scientific study of food is one of man's most important endeavors, mainly because food is his most important need. It is necessary for his survival, his growth, his physical ability, and his good health. Food processing and handling is the largest of all of man's industries. Many factors require that those scientists who choose to study foods be prepared to absorb as much of the physical and life sciences and as much engineering as possible. Among these are the chemical complexity of foods, their vulnerability to spoilage, their role as a disease vector, and the varied sources of foods. The availability, nutritional adequacy, and wholesomeness of foods are also quite varied.

Whether we know enough of the facts to trace the development of food science from the beginning is questionable. History reports that the Romans realized, more than the Greeks, Egyptians, or any of the prior civilizations, that agriculture was a prime concern of government. The Romans, as the Egyptians and the Greeks before them, were able to preserve a variety of foods by holding them in vinegar (with or without brine), in honey, or in pitch. Some foods were also dried either by the sun or over a fire.

It is generally believed that until the later part of the 18th century the preservation of foods had evolved as an art handed down from generation to generation. Its development was slow, depending on accidental discovery, observation, trial and error, and attempts to reproduce and put into practice the newly found techniques. Drying, freezing, smoking, fermenting, cooking, and baking had been practiced for centuries—even by illiterates. Foods frozen accidentally in cold climates and foods dried accidentally in dry climates were observed to have a longer shelf life than foods which were neither frozen nor dried. Foods that might have been put over a fire to hasten drying could easily have led to the smoking process. Thus, chance occurrences led to preservation methods that permitted man to conserve foods during times of glut so that he might survive the leaner spells. It can be said, then, that those who made the

preservative

method

Preserve: نگه داشتن

observations and realized their impact and put their interpretations to the test, until the new practice was proven, were the first food scientists. Spallanzani and Appert were among the first to apply the quasi-scientific methods for preserving foods, and in 1809 Appert won a prize from the French Government for developing a thermal processing technique for foods to be used by the military. Appert is credited with developing the canning process. Because of the scarcity of scientific information, Appert had to employ trial and error tactics, but his records attest to the accuracy of his observations and conclusions and show that he applied the scientific approach to gain his outstanding achievement, even though he did not know why his method worked.

It was not until the discoveries of Pasteur in 1850 and the work of other microbiologists such as Prescott and Underwood in 1895 that man learned that bacteria spoiled food and why thermal processing prevented food spoilage. In 1898, it was noted that bacteria were destroyed by exposure to radioactive salts of radium and uranium. By 1930, the use of ionizing radiations to preserve food was patented by O. Wust. Modern technology has made possible the controlled, automated drying processes and sophisticated modifications such as freeze-drying, drum-drying, spray-drying, fluidized-bed drying, etc. Controlled, automated versions of thermal and refrigeration processes have also been developed. Radiation processing (by electron-, X-, and gamma-rays), microwave processing, and aseptic canning have also been introduced.

Part I. Comprehension Exercises

A. Put "T" for true and "F" for false statements. Justify your answers.

- Physical science, life science, and engineering are important fields of study for food scientists. ☒ T
- Chemical complexity of food is a factor for the spoilage of food. ☒ F
- Foods are different in their availability, nutritional adequacy, and wholesomeness. ☒ T
- Food scientists are able to track the development of food science. ☒ F
- Greeks could preserve foods for a long time because they held them in vinegar. ☒ T
- Accidental occurrences had important role in the conservation of food. ☒ T
- Prior civilization realized more than Romans that agriculture was a primary concern of government. ☒ F

By 1945 → later than.

histological destructions
در مرفوع تخریب

modern = Emerging = novel = Innovative
 نوین = نوپدید = نو = نوآورانه

8. Preservation of food as an art evolved from the later part of the 18th century.
 9. Scientific approach used by Appert brought him success.
 10. Exposure to radio-active salts of radium and uranium prevents food spoilage.

B. Choose a, b, c, or d which best completes each item.

1. Food is the largest of all of man's industries.
 a. survival b. endeavors c. process d. factor
2. Later part of the 18th century is important because of foods had evolved as an art.
 a. the drying b. the preservation c. the freezing d. the processing
3. Trial and error were among other elements which the development of food preservation.
 a. helped b. slowed down c. prevented d. reproduced
4. Putting foods over a fire to hasten drying will lead to
 a. the drying process b. the smoking process c. the fermenting process d. the cooking process
5. Conserving foods during times of glut helped man in times of food shortage.
 a. to live b. to conserve food c. to preserve food d. to practice
6. Spallanzani and Appert were one of the first who tried
 a. to win a prize from the French Government b. to develop a thermal processing technique for food c. to apply the scientific methods for preserving foods d. to employ trial and error tactics for food preservation

C. Answer the following questions orally.

1. Why is scientific study of food important? Food is man's most important
 2. What is the history of the development of food science?
 3. What is generally believed about the preservation of foods?
 4. What does history report about food preservation?
 5. What did the first food scientists do?

Sun drying spray drying Fluidized-bed drying Drum drying smoking Freeze drying

۱) وندلا ۲۰ بهیج کیران غذا کا دست کا پنا بارہاں بیجی پر جاساں بخش جاسی ہیں کتاسی راسنہ با شند۔
 ۲) علم در دانش است مسائل کسلا نریں با تمام بیجی کی آن حل کنہ۔
 ۳) مینی کیاہاں شیت بہ نوری حق و فور شید آسبیبہ زیر است۔
 ۴) کسانیزہ کیران عقالین نکالند ساری۔
 ۵) امکان دار کمر بعد ای کرہ بیش از چند سال با کسنہ۔

Part II. Language Practice

A. Choose a, b, c, or d which best completes each item.

- When foods, hands should not touch mouth, nose, or other parts of the body.
 a. processing *فرادری* c. canning *کسنر و کیران*
 b. handling *مکتبہ کیران* d. observing *مشاہدہ*
- Some roots water more than others.
 a. absorb *جذب کیران* c. report *بزارری*
 b. conserve *محفوظ رکھنا* d. reject *دفعہ*
- Science is trying to solve farming problems with all its
 a. adequacy *دناست* c. wholesomeness *ظرافتی*
 b. glut *صفوفہ بران* d. complexity *پیدیدگی*
- Some plants are to strong sunlight.
 a. vulnerable *آسیب پذیر* c. vector *حامل*
 b. askeptic *حنافونش* d. preserved *حفظ شدہ*
- The of butter may be more than a few years.
 a. thermal processing *فرادری* c. smoking *دردی کیران*
 b. reproduction *ما و کولری* d. shelf life *کمر واز تاش*
- Mechanizing farming activities is of our government.
 a. the primary concern *صافہ لکشی* c. the thermal processing *فرادری*
 b. the processing technique *دکلمستہ ادیش* d. the canning process *کسنر و کیران*
- In operation, the container should be tightly sealed.
 a. the scientific *دکشی* c. the drum-drying *کسنر و کیران*
 b. the spray-drying *صفت ساری اسپری* d. the canning *کسنر و کیران*

B. Fill in the blanks with the appropriate form of the words given.

- Spoil *فاسد کیران*
 a. Food science tries to reduce the amount of food spoilage *مہلہ مجبول اسم صافہ*
 b. Apple slices are easily in normal temperature. *spoilage*
 c. Heavy flood is responsible for the of many crops in our country. *spoilage*
- Observe *ملاحظہ کرنا*
 a. Modern science basically depends on and experiment. *ملاحظہ کرنا*
 b. Food scientists carefully the microorganisms that can spoil food. *observe*
- Radioactive *مضرہ کیران*
 a. People believe that dust carried by the wind can be harmful to their lives. *radioactive*

بعد از صرف تشریف اسمی آید

به تدریس
Radioactivity

رادیوم

اورانیوم

b. We know that the ... of some metals like radium and uranium was unknown to man years ago.

4. Evolve

evolved

تئوری

ترکیب

a. Scientists have new theories related to the structure of atom.

b. There has been considerable change in the theory of proposed by early scientists.

c. It is really difficult to understand and accept new ideas.

5. Ionize

evolutionary

a. Some elements are found in the form of neutral in nature.

b. Some foods may be preserved by radiation.

c. In a salt solution, atoms of hydrogen will combine with each other through process.

d. Electricity will the component elements of the solution.

6. Automate

ionize

automated

a. Food preservation is now a relatively industry.

b. It is quite clear that the high efficiency gained in food industry is at the result of the of food handling machinery.

c. For the wholesomeness of food, scientists are eager to handle it by

..... machines.

C. Fill in the blanks with the following words.

industry

natural

brine

preserve

technological

storage

freeze

invention

By 1875, man had learned to foods by artificial refrigeration using first ice, and later manufactured ice, to preserve fish and meats. He also learned that could be made colder than 0°C, and this enabled him to foods. By 1890, mechanical refrigeration came into wide use, opening the way to the frozen of foods. Quick freezing was first used in 1924 to preserve fish. One of the most important ensuring developments was the of the fish blocks by Birdseye technologists. This is considered by many to have revolutionized the fish processing industry.

D. Put the following sentences in the right order to form a paragraph. Write the corresponding letters in the boxes provided.

a. But this is understandable since we take for granted the presence of adequate amounts of oxygen in the air.

ما تنفس می کنیم و همیشه از منابع فراوان آب و هوا برخورداریم.
 منابع فراوان آب و هوا

- b. It is universally accepted that man's basic needs are food, clothing, and shelter.
 c. We breathe and we are ever aware of the copious supplies of water in the many rivers and lakes.
 d. Of course, such a listing ignores man's need for oxygen and water, two critical requirements.

منابع فراوان آب و هوا

1 2 3 4

b	d	a	c
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دو مورد عمومی دیگر که نیاز دارند (منابع فراوان)
 (منابع فراوان) آب و هوا

Section Two: Further Reading

ایضاً تغذیه ای غذاها

Nutritional Quality of the Foods

The optimum physical and mental functioning of the body is dependent on the nutritional quality of the foods it receives. Man has observed this from the beginning of time, and certain diets have evolved as a result of these observations. The analysis and planning of diets were not possible until food science became established to a degree and produced the basic information that made these activities possible. From the knowledge acquired through the development of food science emerged conclusions that resulted in the classification of foods into nutritional groups representatives of which are considered to be necessary in all diets to ensure the intake of a recommended minimum of protein, carbohydrates, vitamins, minerals, etc. Evidence of the links between diets and certain symptoms of ill health became easier to obtain as food science developed, and the potential of specific diets in corrective and preventative medicine has been since recognized and is effectively practiced. With all its importance, food can be harmful if it is contaminated in some ways. Food poisoning and diseases caused by unwholesome foods are not rare in every society. The factors that contribute to food-borne diseases are related to ignorance of proper food-handling procedures or to the unwillingness of food handlers to comply with the guidelines for handling foods sanitarily. It is unfortunate that we are unable to reduce the large numbers of food poisonings that occur each year, as there is no insurmountable reason why it

مسموم شدن

could not be done.

Meals that are consumed following their preparation are not likely to be responsible for food poisoning. On the other hand, meals that are consumed hours after preparation, such as is customary at picnics and outings, should be supervised by knowledgeable people. This is especially true with salads containing eggs, chicken, or turkey or products made from them. Prepared foods that are not to be used for long periods should be immediately refrigerated and reheated, if necessary, just prior to use. Some products such as puddings, custards, and eclairs should be held under refrigeration at all times. Home freezers are not of sufficient capacity to flash-freeze stuffed chickens and especially stuffed turkeys, and, therefore, poultry should not be stuffed prior to freezing. Instead they should be stuffed prior to cooking. Leftovers should be used as soon as possible; this is especially true of salads, chicken, and other perishables. If, due to odor or other indicator, there is any doubt about the safety of a food, it is best to discard it unless advice can be obtained from a food scientist.

From what we know about bacteria that are involved in food-borne diseases, we can control their growth by controlling the temperature of the foods. Thus, foods held at temperatures below 38°F or above 145°F will not undergo a buildup of pathogens. Just as important, we can keep the contamination levels of pathogens quite low by following sanitary guidelines in the handling of foods. To do this effectively, sanitary procedures must be practiced in all phases of food handling up to the moment it is consumed, and two prime needs in any sanitation program are (1) the appointment of a person to take the responsibility for the program and (2) the institution of measures to ensure the continuation of the program. Also it must be remembered that sanitary handling practices are of no meaningful use unless the food itself is safe and unadulterated when it is procured.

It is often said that good sanitation is good economics. Actually good sanitation is an additional cost of production. However, the good economics are evident in the long run through customer satisfaction, continuing sales, minimized losses from spoilage, and minimized probability of damaging law suits that could arise from food poisonings.

Comprehension Exercises

A. Put "T" for true and "F" for false statements. Justify your answers.

1. Physical and mental functioning of body is dependent on the quantity of food.

-⁺ 2. Analysis and planning of diets became possible because of the establishment of food science. ^{برنامه ریزی} ^{آسان}
-⁺ 3. For the analysis and planning of diets, basic information is needed. ^{برنامه ریزی} ^{نیاز}
-^F 4. Classification of foods into nutritional groups has nothing to do with the development of food science. ^{تقسیم بندی} ^{بیماریها} ^{انتقال یافته از طریق غذا}
-^F 5. Proper food handling procedures lead to food-borne diseases. ^{نادرست} ^{بیماریها}
-^T 6. Controlling the growth of bacteria is related to the temperature of food. ^{کنترل} ^{رشد} ^{دما}
-^F 7. Since good sanitation means an additional cost of production, we should spend less money for sanitation purposes. ^{از زمانه} ^{افزوده} ^{هزینه} ^{روشها} ^{کاهش} ^{منفق}

B. Write the answers to the following questions.

1. When was the analysis and planning of diets possible?
2. What are the factors that contribute to food-borne diseases?
3. How can we control the growth of bacteria?
4. What are the two important needs in any sanitation program?
5. Why can food be harmful?



Section Three: Translation Activities

A. Translate the following passage into Persian.

Food Components

The availability of an abundant supply of food does not necessarily guarantee survival unless the food is nutritionally complete and contains no harmful substances. Unfortunately, serious and sometimes fatal illnesses result from diets that lack sufficient proteins, vitamins, or other nutritional components. Serious adverse consequences may also result from the consumption of foods containing such harmful substances as infectious microbes, microbial toxins, viable parasites, ect. Thus throughout man's evolution he has had to concentrate on many factors affecting foods.

B. Find the Persian equivalents of the following terms and expressions and write them in the spaces provided.

1. aseptic canning

2. automated
3. brine
4. custards
5. drum-drying
6. eclairs
7. evolve
8. fermenting
9. flash-freeze
10. fluidized-bed drying
11. freeze-drying
12. ionizing
13. microbiologist
14. microwave processing
15. observation
16. pathogens
17. preserve
18. pudding
19. radioactive
20. radium
21. shelf life
22. spoilage
23. spray-drying
24. symptoms
25. thermal
26. unadulterated
27. uranium
28. vector
29. vinegar