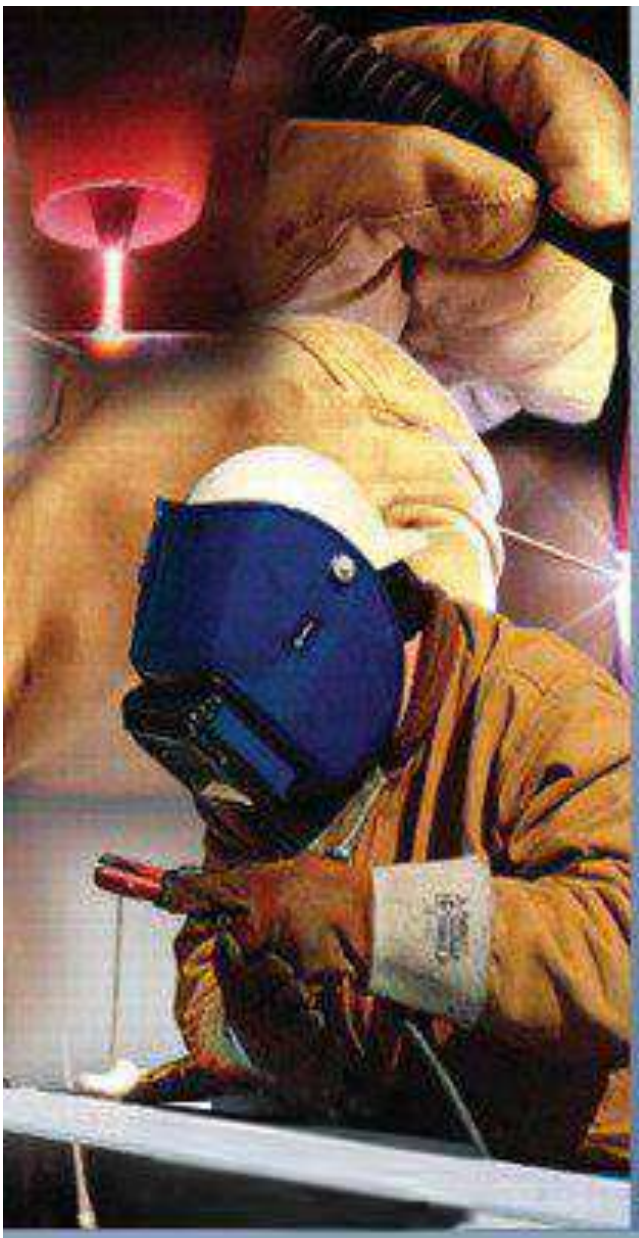


WELDING TECHNOLOGY

3rd COURSE

STUDENT'S BOOK 1

- READING
- SPEAKING
- LISTENING and WRITING
- GRAMMAR
- PRONONCIATION

ANDIJAN-2018

MINISTRY OF HIGHER AND SECONDARY SPECIALIZED EDUCATION OF THE REPUBLIC OF UZBEKISTAN

ANDIJAN STATE UNIVERSITY

D.ISROILOVA

WELDING TECHNOLOGY

Oliy ta'lim muassasalarining texnologiya fakultetlari -payvandlash yo'nalishi talabalari va mustaqil o'rganuvchilar uchun

ISROILOVA DILDORA.

Ingliz tilidan qo’llanma: Oliy ta’lim muassasalarining texnologiya fakultetlari payvandlash yo‘nalishi talabalari va mustaqil o‘rganuvchilar uchun /D.Isroilova

Mas’ul muharrir: M.Abduvaliev. Andijon 2017. 96 b

Ma’sul muharrir :

M.Abduvaliev

filologiya fanlar nomzodi

Taqrizchilar:

X.Sobirov Andijon Mashinasozlik institutining “Umum texnika fanlari” kafedrasi dotsenti.

S.Misirov-NamDU “Ingiliz tili va adabiyoti” kafedrasi dotsenti.

Zahiriddin Muhammad Bobur nomidagi Andijon davlat universiteti

Ilmiy kengashining 2018 yil 22.11 kungi

№ 3yig’ilishi tomonidan yordamchi o’quv qo‘llanma sifatida

nashrga tavsiya etilgan.

PREFACE

The decree of the President of the Republic of Uzbekistan Sh.M.Mirziyoyev's 2909 in 2017 20 April "Improvement of Higher Education Institutions and Improvement Their Material Base."Creation of new generation educational literature and their invention into the educational process of higher education institutions, provision of higher education institutions with modern teaching materials, educational and methodical and scientific literature, including procurement and translation of the most recent foreign literature, regular information and resource centers' update.

This student`s book was worked out on newly established requirements, embracing all aspects of study skills: reading, listening and speaking. Student`s book for students consists of 15 lessons, with listening tasks. Each lesson begins with motivation activity focused on new topic, followed by exercises, listening and speaking, reading and writing activities. "English" for the first year students is B2 level students book designed to meet the communication needs of students, English for Specific Purposes and also for self study students.

And I hope students will find it useful for increasing their English language skills.

SO`Z BOSHI

O`zbekiston Respublikasi Prezidentining 2017-yil 20-aprelda 2909«Oliy ta’lim tizimini yanada rivojlantirish chora-tadbirlari to’g’risidaOliy ta’lim muassasalariningmoddiy tehnika bazasini mustaxkamlash va yuqorimalakali mutahassislar tayyorlash sifatini tubdanyahshilash chora- tadbirlari,Yangi avlod o’quv adabiyotlarini yaratish va ularni oily ta’limmuassasalarining ta’lim jarayoniga keng tadbiq etish, oily ta’lim muassasalarinizamonaviyo’quv ,o’quv-metodik va ilmiy adabiyotlar bilan ta’minlashqarori qabul qilingan.»

Ushbu qarorning ijrosi yuzasidan TMJ yo`nalishida tahsil olayotgan talabalar uchun o`quv qo`llanma ishlab chiqildi. O`quv qo`llanma yaratishda “Yo`nalishga Kirish” fani asos bo`lib xizmat qildi. O`quv qo`llanma o`z ichiga 15 ta darsni olgan bo`lib, tinglab tushinish, o`qish, yozish va gapirish ko`nikmalarini rivojlantirishga qaratilgandir. Shuningdek, yo`nalishiga mos keluvchi yangi so`zlar va glossary ham taqdim etilgan bo`lib talabalar o`z mutaxassisliklari bo`yicha ingliz tilini chuqurroq o`rganishlari uchun mo`ljallangandir. Umid qilib qolamanki talabalar uchun ushbu qo`llanma kerakli va foydali bo`lib hizmat qiladi.

Предисловие

20 апреля 2017 года Президент Республики Узбекистан 2909 «О мерах по дальнейшему развитию системы высшего образования» укрепление материально-технической базы образовательных учреждений и повышение качества подготовки высококвалифицированных специалистов, создание учебной литературы нового поколения, а также широко внедрить их в учебный процесс, обеспечить учебные заведения современной учебной, методической и научной литературой ».

Для реализации данного постановления было разработано учебное пособие для студентов, обучающихся по направлению ТМЖ, основой которого был предмет «Введение в направление». Учебник содержит 15 уроков, направленных на развитие навыков аудирования, чтения, письма и разговорной речи. Также включены новые слова и глоссарий, которые подходят специальности, и поможет студентам изучить английский язык в определенных направлениях. Надеемся, что этот учебник будет полезным и необходимым для студентов в будущей их деятельности.

Lesson1

What is welding?

Payvandlash o`zi nima?

Read and learn! ***O`qing va o`rganing!***

Welding is a process of joining metallic components with or without application of heat, with or without pressure and with or without filler metal. A range of welding processes have been developed so far using single or a combination above factors namely heat, pressure and filler. Welding is fabrication or sculptural process that joins materials, usually metals or thermoplastics, by causing fusion, which is distinct from lower temperature metal-joining techniques such as brazing and soldering, which do not melt the base metal. We use welding in building, in mechanical engineering, in shipbuilding. Also in radio engineering and in rocket production. Welding processes can be classified:

- Fusion welding — *Eritibpayvandlash*

Pressure welding	*Bosimostidapayvandlash*

Vocabulary:

Fabrication	sovuqlayinpayvandlash
Pressure	bosim
Fusion	eritish
Welding	payvandlash
Melt	eritmoq
Brazing	kavsharlash
Thermoplastics	termoplast
Soldering	kavsharlash
Heat	qizdirmoq
Filler	prokladka

Advantages and disadvantages of welding

Payvandlashningafzalliklarivakamchiliklari

Advantages

1.It is possible to automate
2.Not heavy
3.The cheap cost price
4.Hermetic condition
5.Simple structure can be break.
6. Efficiency

Disadvantages

1.In heating process metal's condition is changed.
2. In vibration metal

Answer the questions: Savollarga javob bering:

1.What is welding?

2.Where do we use welding?

3.What kind of advantages and disadvantages of welding process do you know?

4. How we classify welding process?

Put the words in correct order: Berilgan so'zlarni o'z o'rniga qo'ying.

1.Welding, for, cutting, is, metals, used.

2.Oscar Kjellberg, a covered, or, invented, electrode.

3.Was, used, it, the ,by ,industry ,automobile.

4.Automatic, was, by, welding, P.O. Nobel, invented.

5.The laser, welding ,is, finding ,automotive, metalworking applications in, operations.

Listen and put the appropriate words:

Tinglang va kerakli so'larni joyga qo'ing:

Welded joints are more ……. as less labor and less material is required. The efficiency of welded joint is more than that of the …….joint. The welded joints …….. than the bulky riveted/butted joints. The speed of fabrication is faster in ……with the riveted joints. Welded joints are more brittle and therefore their fatigue strength is less than the …….. joined. Due to uneven heating and cooling of the members during the welding, the members may distort ……..in additional stresses. Skilled labor and …….. are required for welding.8. No provision for expansion and ……is kept in welded connection.

Grammar Practice

THE ARTICLE

Exercise 1.1. Fill in "a" or "an".

1. ___ mask 4. ___ electrode 7. ___ gun

2. ___ wire 5. ___ 8. ___ robot

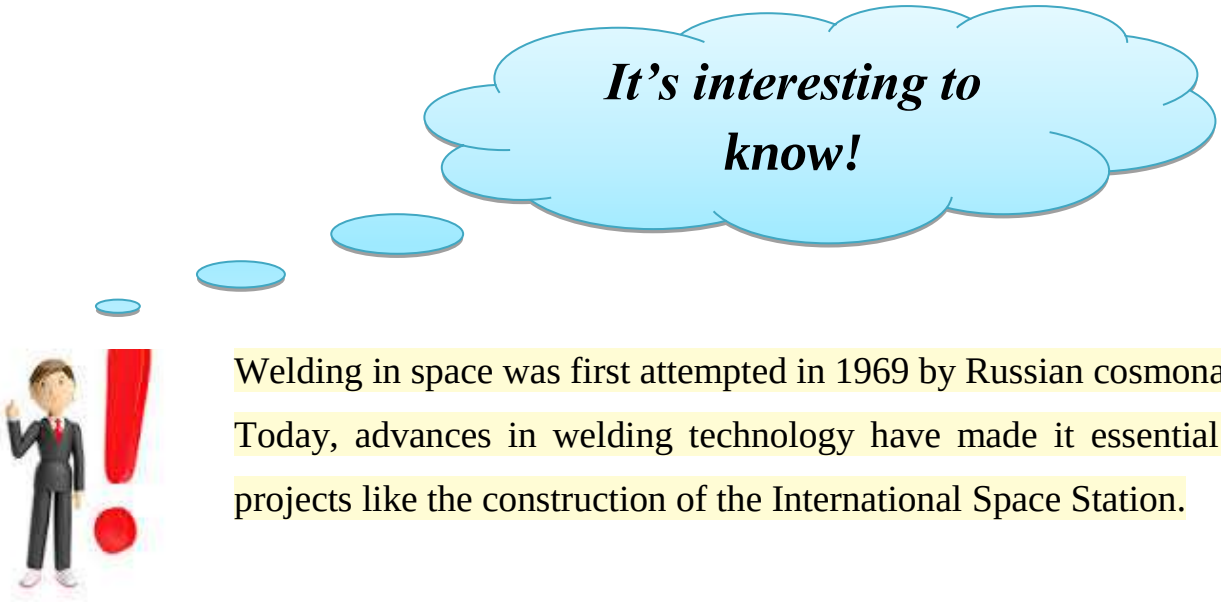
3. ___engineer6. ___ plastic 9. ___ welder

Exercise 1.2. Fill in "a", "an" or "the" where necessary.

1. This is ___ safety sign.
2. Where is __ joint venture?
3. ___ Anvar's uncle is __ welder.
4. Barno has got ___ mask.
5. This is ___ way to lab.
6. It's ___ long way to __ office.
7. There are a lot of warning signs in __factory.
8. ___ Rustam and ___ Ravshan are brothers.
9. ___ Eifel Tower is in Paris.
10. ___ Sphinx is in __ Egypt.
11. There's some liquid on ___ floor.
12. Open ___ door, please!
13. These are ___ our shoes.
14. ___ English like __ tea.
15. ___ small cable is mine.
16. ___ matches are dangerous for children.
17. ___ man in the green shirt is Sardor.
18. He has __ telephone and __ computer.
19. Dilbar is not in ___ office today.

Pronunciation.

Voiced	Voiceless
[b] boat verb	[p] post stop
[d] deed lead	[t] tease seat
[g] god dog	[k] kiss sick
case doc	
[v] verb brave	[f] fish leaf
[z] zoo ooze	[s] sick kiss
cease nice	
[ʒ] usual pleasure	[ʃ] shake cash
[h] home heir	
[dʒ] judge ginger	[tʃ] check catch
[m] mate tame	
[n] net ten	
[ŋ] sing singer	
[l] life clear	
[r] road door	



Welding in space was first attempted in 1969 by Russian cosmonauts. Today, advances in welding technology have made it essential for projects like the construction of the International Space Station.

History of Welding

Payvandlash tarixi

Lesson 2

Read and learn. ***O`qing va o`rganing***

<u>Middle Ages</u>

Welding can trace its historic development back to ancient times. The earliest examples come from the Bronze Age. Small gold circular boxes were made by pressure welding lap joints together. It is estimated that these boxes were made more than 2000 years ago. During the Iron Age the Egyptians and people in the eastern Mediterranean area learned to weld pieces of iron together. Many tools were found which were made approximately 1000 B.C.

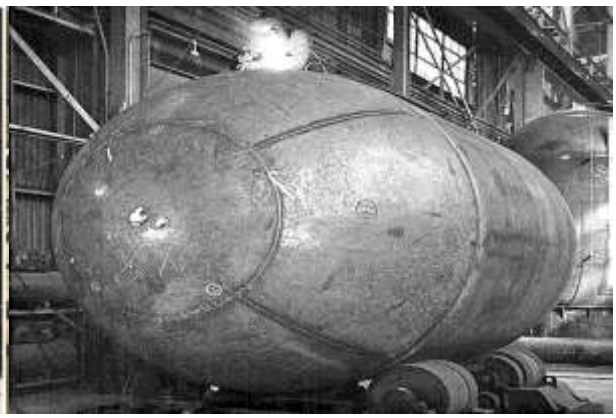
During the Middle Ages, the art of blacksmithing was developed and many items of iron were produced which were welded by hammering. It was not until the 19th century that welding, as we know it today was invented.

1800

Edmund Davy of England is credited with the discovery of acetylene in 1836. The production of an arc between two carbon electrodes using a battery is credited to Sir Humphry Davy in 1800. In the mid-nineteenth century, the electric generator was invented and arc lighting became popular. During the late 1800s, gas weldingand cutting was developed. Arc welding with the carbon arc and metal arc was developed and resistance welding became a practical joining process.

1900

Approximately 1900, Strohmenger introduced a coated metal electrode in Great Britain. There was a thin coating of clay or lime, but it provided a more stable arc. Oscar Kjellberg of Sweden invented a covered or coated electrode during the period of 1907 to 1914. Stick electrodes were produced by dipping short lengths of bare iron wire in thick mixtures of carbonates and silicates, and allowing the coating to dry. Meanwhile, resistance welding processes were developed, including spot welding, seam welding, projection welding and flash butt welding. Elisha Thompson originated resistance welding. His patents were dated 1885-1900. In 1903, a German named Goldschmidt invented termite welding that was first used to weld railroad rails. Gas welding and cutting were perfected during this period as well. The production of oxygen and later the liquefying of air, along with the introduction of a blow pipe or torch in 1887, helped the development of both welding and cutting. Before 1900, hydrogen and coal gas were used with oxygen. World War I brought a tremendous demand for armament production and welding was pressed into service.

Vocabulary:	
Lap joints	Uchmauchulanish
Circular	yumaloq
Iron	temir
Liquefying	Suyuqlikkaaylantirish
Oxygen welding	Kislorodlipayvandlash
Armament	qurrollanmoq
Blow	zarba
Hammering	bolg'alash
Flash	uchqun
Tremendous	yuksak/ulkan
Butt welding	ulanish
Hydrogen	vodorod
Arc welding	Yoylipayvandlash

Say True or False: Ayting To'g'rimi yo'ki Noto'g'ri:

1. During the Iron Age the Egyptians and people in the eastern Mediterranean area learned to weld pieces of iron together.

2. Arc welding with the oxygen arc and metal arc was developed and arc welding became a practical joining process.

3. In the mid-nineteenth century, the electric generator was invented and arc lighting became popular.

4. Gas welding and cutting were developed during 1885-1900 period as well.

Write the sentences in chronological order

Gaplarni hronologik tartibda yozing

1. Before 1900, hydrogen and coal gas were used with oxygen.

2. Small gold circular boxes were made by pressure welding lap joints together.

3. Stick electrodes were produced by dipping short lengths of bare iron wire in thick mixtures of carbonates and silicates, and allowing the coating to dry.

4. Arc welding with the carbon arc and metal arc was developed and resistance welding became a practical joining process.

5. The Egyptians and people in the eastern Mediterranean area learned to weld pieces of iron together.

Listen and answer the questions:

Tinglang va savollarga javob bering:

1. What was created by scientist V.V Petrov?

2. Which scientists invent of carbon-arc welding?

3. What was demonstrated in Paris in 1881?

4. Who was introduced arc welding with consumable metal electro design in 1888?

Grammar Practice

THE NOUN

PLURALS OF COUNTABLE AND UNCOUNTABLE NOUNS

Exercise 2.1 Divide the following nouns into countable and uncountable.

Furniture, coffee, leaf, food, computer, list, blood, job, work, language, car, advice, information, money, progress, permission, provision, baggage, luggage, promotion, traffic, weather, window, knowledge, air, water, holiday, accommodation, screw, mountain, kick, bolt, accident, wing.

Exercise 2.2 Write sentences in the plural as in the example.

Example: *This man is an engineer. – These men are engineers.*

1.This man is my brother. 2. That woman is my sister. 3. This child is my son. 4. That laboratory is big. 5. This building is white. 6. This man is an engineer. 7. That woman is a doctor. 8. That girl is my sister. 9. This is a first-year student. 10. This engineer is a good specialist in his field. 11. My uncle has an expensive car. 12. This is a mess-room. 13. I have a handy pen. My pen is in my pocket. 14. There is a TV set in our room.15. The teacher gave us an assignment. 16. He wants to be an engineer.

Pronunciation.

The suffix of the plural form is pronounced:

/iz/ when the noun ends in a(n)

/s/, /ks/, /ʃ/, /tʃ/ ,/z/ sound.

For example: buses, foxes, brushes, torches, roses.

The suffix of the plural form is pronounced:

/s/ When the noun ends in a(n) /f/,/k/,/p/,/t/ sound.

For example: cliffs, books,shops,cats,myths.

The suffix of the third person singular is pronounced:

/s/ when the verb ends in /f/,/k/,/p/ or /t/ sounds.

For example: laughs, kicks, stops, sits.

It's interesting to know!

The earliest recorded welds occurred in 3,500 B.C., the Bronze-Age. Pictures of welders and their ancient tools have been discovered in long-sealed Egyptian tombs!

Lesson 3

Welding and Its Role in Society

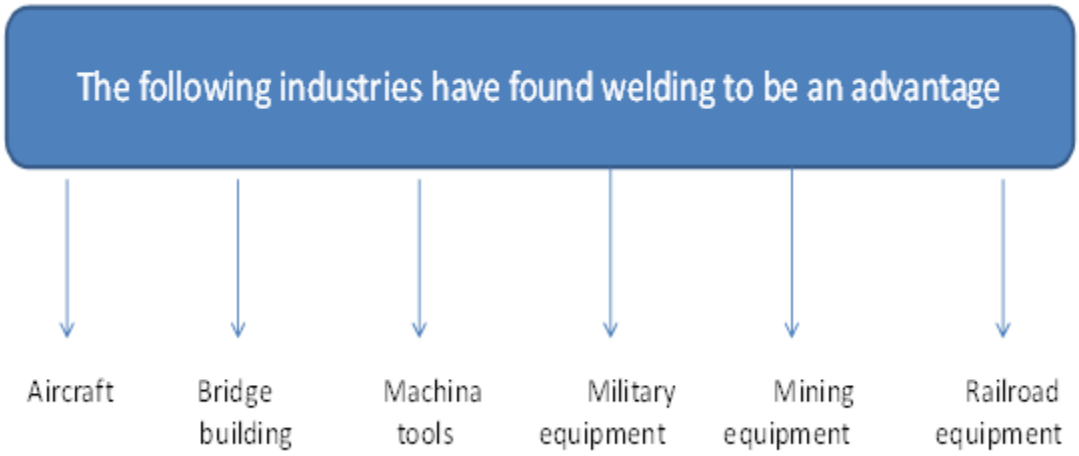
Payvandlashning jamiyatdagi o`rni




Read and learn.*O`qing va o`rganing.*

Welding is playing an important role in the expansion and production of our industrial society. Without welding, industry and construction would never be able to meet consumer demands for new and better products. New products require new techniques. Welding manufacture occupies the most extensive area in industrial technologies of any branch. Welding technologies are applied not only at building, but at reconstruction and dismantle steel construction. Depending on appointment of metal designs manufacture of welding works is spent by various ways. There is no such area in human life,

which welding works would not be applied. It both astronautics, and public health services and mechanical engineering .Not only on the earth, but also under water and in a space welding is works. Manufacture of welding works need where strong connection of materials is necessary. The most economic and effective way of connection of metals is a welding. There is no other existing way to connect some of metals in details without welding. Presently, there are more than fifty welding processes being used in the industry. With each new process that is developed, there is a corresponding need for additional well-trained and well-qualified workers.



***Vocabulary*:**	
Expansion	Rivojlanish
Dismantle	Qaytata'mirlash
Steel construction	Metal qurilma
Welding processes	Payvandlashjarayoni
Metal designs	Metal chizmalari
Corresponding	Moskelmoq
Industry	Sanoat
Manufacture	Ishlabchiqarish
Under water	Suvostida
Space welding	Samodagipayvandlash
Expansion	Rivojlanish

Dismantle	Qaytata'mirlash
Steel construction	Metal qurilma

Match the pictures with descriptions.

Rasmlarni matnlar bilan moslashniring.

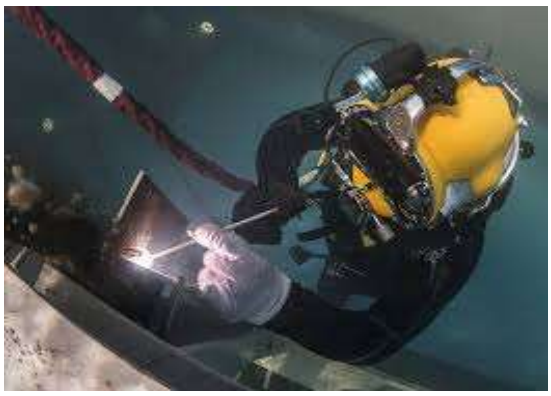
(a)Welding power sources are also a problem, as the traditional gasoline or diesel engines present astronomical difficulties in orbit. Portable generators pull surrounding air through the machine for cooling, which is impossible in space. o that end, NASA, Space X, and other private organizations are also developing advanced new techniques in terrestrial welding, especially involving the friction stir process.

(b)Wet Welding indicates that welding is performed underwater, directly exposed to the wet environment. A special electrode issued and welding is carried out manually just as one does in open air welding. The increased freedom of movement makes wet welding the most effective, efficient and economical method. Welding power supply is located on the surface with connection to the diver/welder via cables and hoses.

(c)Ceramic-to-metal components fulfill the very highest demands of the metal-working industry.

The automobile industry, in particular, relies on the use of positioning and welding pins. The automobile industry places high demands on the materials used. These are demands that push the individual materials, metal and ceramics, to their limits.

(d)Bridges are constructed wholly or in part by the welding process. For over 50 years, steel bridges, both highway and rail road's, have been constructed by this means and the number of welded – steel bridges is increasing.



***a)*_____** ***b)*_____**

***c)*_____** ***d)*_____**

Match the words to the descriptions. So'zlarni ta'rifiga moslashtiring.

1. Expansion	a) to produce goods in large numbers in a factory using machines
2. Industry	b)to match or be similar or equal
3. Manufacture	c)when something increases in size, number or importance
4. Space	d)describe machines or their parts
5. Mechanical	e)the empty area outside the Earth atmosphere, where the planets and the stars
6. Corresponding	f) the companies and activities involved in the process of producing goods for sale, especially in a factory or special area

Listen and tick step-by-step topics:

Tinglang va berilgan matnlarning ketma-ketligini aniqlang.

a) railroad

b)aircraft

c)machine tools

d) automotive

Grammar Practice

THE POSSESSIVE CASE

3.1. Put the phrases in the possessive case as in the example.

Example: *The son of our manager – our manager's son*

1) the house of Mr.Ahmedov; 2) a book of the student; 3) works of Beruny;4) the bags of those women; 5) the note-books of the children; 6) the cottage of my parents; 7) professional skills of the engineer; 8) the influence of the sun; 9) the atmosphere of the earth; 10) the arrival of the airplane; 11) the policy of the company; 12) the active duty of my brother; 13) the mother of Rano and Lola; 14) the work of the engineers; 15) the times of Sohib the terrible.

3.2. Choose the correct item.

1.Lola / the text-book

a) Lola’s text-book

b) the text-book of Lola

c) the Lola’s text-book

2. The cadets / the hostel

a) the cadets’s hostel

b) the cadets’ hostel

c) the hostel of the cadets

3. The roof / the house

a) the house's roof

b) the roof of the house

c) the house' roof

4. The Abdullaevs / the car

a) the Abdullaevs' car

b) the Abdullayev's car

c) the car of the Abdullayevs

Pronunciation.

"The"is pronounced /ðə/ before words which begin with a consonant sound.

For example: the glass, the baby.

"The" is pronounced /ðiː/ before words which begin with a vowel sound.

For example: the egg, the apple.

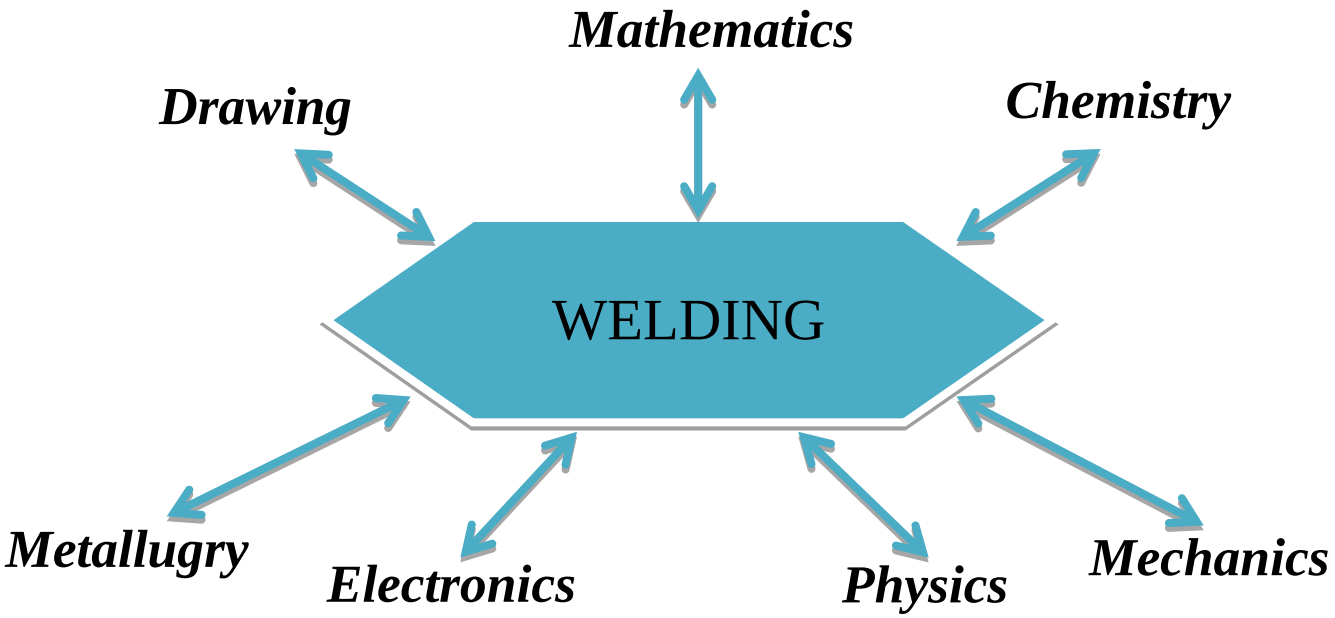
It's interesting to know!

During World War II, there had been such an advancement in welding that it allowed for ships to be made in hyper drive. The quickest ship made only took four days, 15 hours, and 27 minutes. This was in 1942 and that record still holds strong today!

Lesson 4

Welding Science and other subjects

Payvandlashning boshqa fanlar bilan aloqasi



Warming up: Muhokama uchun savollar:

1. Why is Physics so important for welders?
2. Do you really need Chemistry as a welder?
3. Why do welders need Mechanical Drawing?
4. Does a welder need to have strong Math skills?

Read and learn. *O`qing va o`rganing.*

The welding engineer develops welding science by Physics, Chemistry and Mathematics and applies it in the field of

Metallurgical, Mechanical, Physical, Electrical, and Chemical Sciences. The technology of metals covers as reception of metals from the raw materials, based on change of its chemical compound, chemical and physical properties, including metallurgy, and on change of the form, structure and physical properties of processed preparations and details, including, machining of metals (processing of metals by cutting), electro physical and electrochemical methods of processing metals. Drawing on metal of sheeting's area of a science and the techniques, covering processes of reception metals of ores or other materials, and also the processes connected with change of a chemical compound, structure and properties of metal alloys. In welding we need to have a strong knowledge of geometry in order to work with angles, radius, volume, diameter and circumference. A part of this work means a welder needs to know how to use drafting tools and a compass. With this knowledge, a welder will be capable of executing the following tasks that are integral to the trade:

- Forming accurate joints
- Measuring and creating angles
- Finding the correct proportions of a circle when welding circular objects.

***Vocabulary*:**

Physics	Fizika
Raw materials	hom-ashyo
Chemistry	Kimyo
Alloy	qorishma
Mathematics	Matematika
Drawing	chizma
Metallurgical	metallurgiya
Pressure	bosim
Mechanics	mehanika

Process	Jarayo’n
Cover	qoplama
Punching	shtamplash

Choose the appropriate word and complete the sentences.

Kerakli so’zni tanlang va gapni yakunlang.

1. Welding Technology has shown that elements, compounds, mixtures of metals and alloys are interlinked with……...

   a) welding b)process c)technology

2. Metals are ……. possessing distinctive features—good heat and electrical conductivity and weld ability.

   a)sources b)row-materials c)chemical elements

3. Alloy means ……. of two or more metals or elements, Ferrous or Iron-Carbon alloys are Steel and Cast-iron.

   a) equipment b) mixture c) facility

4. The mechanical properties of importance in metals for……. are strength, hardness, and impact resistance.

   a)engineering purposes b) mechanical properties c)scientifically

Listen and find the answers to the questions from the topic:

Tinglang va savollarga javobni matndan toping:

1. Do we need atmosphere in welding?
2. What does the air consist of?
3. What are inert gases?
4. What kind of gases includes inert gases?

Grammar Practice

THE PRONOUN

Exercise 4.1. Change nouns for personal pronouns.

1.At Christmas (friends) often give Mary presents. 2. (Mary) likes her friends. 3. I've got a tortoise. I feed __ vegetables. 4. (the bird) is singing lovely.5. (my sister and I) don't like to walk our dog. 6. (the boy) overslept this morning and didn't have time to have breakfast. 7. (you and I) are good friends, aren't you? 8. (your brother and you) spend too much time playing computer games. 9. (Botir and Bobir) went to see their friends. 10. (the students) live in the hostels.

Exercise 4.2. Choose the correct form of the pronouns in brackets.

1. What colour is the car? It is so far that I can't see (it's / its / it) colour.2. They rarely drive to (their / them/ theirs) office. They live near (it's / it / its).3. The pupils of schools have less free time than the students of universities.(They / them) have a lot of homework to do. 4. Look at (me /mine /my) new watch. Do you like (it / them/ its)? 5. These books are (her / hers). Give (them/ their/theirs) to (hers / her). 6. (Theirs / Their / Them) task is much more difficult than (you / yours / your) or (me /mine /my). 7. Why are (you / you / yours) sitting here? It is not (you / your / yours) desk, it is (me /mine /my). 8.

My father is an engineer. (His / him) profession is very interesting. 9. (We /Our /Ours) was the last turn. We have missed (it / its). 10. (Their / Theirs / Them) knowledge of French is not much more superior to (we / our / ours).

Pronunciation. The vowel [ʌ]

1. ugly up

2. bud but

3. dug duck

4. love luck

5. cub cup

Sentences:

1. The funny duck is running around the jug.

2. My other brother doesn't seem to have trouble with my mother.

The words with the vowel [ʌ]that are easily mispronounced for ESL or EFL students

1. study 6. brother

2. won/one 7. country

3. flood 8. mother

4. come 9. couple

5. trouble 10. double

It's interesting to know!

Did you know that if two pieces of metal touch in space, they become permanently stuck together? This may sound unbelievable, but it is true. Two pieces of metal without any coating on them will form into one piece in the vacuum of space. This doesn't happen on Earth because the atmosphere puts a layer of oxidized material between the surfaces.

AUDIOSCRIPT

Lesson1.<u>What is welding?</u> 

Journalist: Let's speak about advantages and disadvantages of welding process because we need to know some important sides. Am I right?

Engineer: Yes, absolutely.

Journalist: First of all. Can you tell me about advantages of welding,please.

Engineer: Welded joints are more economical as less labor and less material is required.The efficiency of welded joint is more than that of the riveted joint.The welded joints look better than the bulky riveted/butted joints.The speed of fabrication is faster in comparison with the riveted joints.

Journalist: Ok. Mmmmm. What about disadvantages?

Engineer: Well about disadvantages**.**Welded joints are more brittle and therefore their fatigue strength is less than the members joined.

Due to uneven heating & cooling of the members during the welding, the members may distort resulting in additional stresses.Skilled labor and electricity are required for welding. Last but not least. No provision for expansion and contraction is kept in welded connection & therefore, there is possibility of racks.

Journalist: Thanks a lot!

Lesson 2. History of Welding 

Journalist: Today we invited in our program master of welding science. Can you give me the history of welding before 20-th century?

Master of welding science: In the end of XIX century on the basis of achievements in area of physics and electrical engineers in welding most developed. For short term a number of new ways of the welding which are a basis of welding techniques and presently has been created. As a source of heating for the most widespread till now a welding kind the electric arch serves. Honor of opening of the phenomenon of the electro arc category belongs to Russian scientist academician V.V.Petrov. The inventors of carbon-arc welding were Nikolay Benardos and Stanisław Olszewski, who developed this method in 1881 and patented it later under the name *Elektrogefest* .

Journalist: Really it's very interesting!

Master of welding science: During 60–70 years of XIX century he investigated the electric arc, and he worked on this in Moscow, St. Petersburg and Kineshma. Nikolay Benardos was the first to apply an electric arc to heat the edges of the steel sheets to the plastic state. He demonstrated a new way of metal compounds in Paris in 1881.Nikolay Gavrilovich Slavyanov was

a Russian inventor who in 1888 introduced arc welding with consumable metal electrodes, or shielded metal arc welding, the second historical arc welding method after carbon arc welding invented earlier by Nikolay Benardos. In 1888, the consumable metal electrode was invented by Nikolay Slavyanov.

Journalist: Thank you for sharing that interesting facts and you are welcome!

Lesson3. Welding and Its Role in Society. 

1. Aircraft welding was first tried in 1911 and used in war craft production by the Germans in World war I. The development of supersonic aircraft, missile and rocket industry.

2. Processes for the manufacture of passenger cars were first introduced during World War II. Since that time, the automobile industry has employed welding on a large scale. The joining process used to build the body, frame, structural brackets and parts of engine.

3. Today some manufactures make and feature full lines of broaching, drilling, boring and grinding machines with welded members. For manufacture of machine tools steel has certain advantages.

4. Welding is the principal method of joining materials used by the railroad industry. It is also used extensively in the construction and repair of equipment on the right-of-way.

Lesson 4. Welding Science and other subjects 

The Atmosphere:

The composition of the atmosphere is of primary importance in welding. There are many gases which are involved in welding. Atmosphere means the air of any particular place, mainly oxygen and nitrogen. Air consists of about four parts by volume of Nitrogen to one part of Oxygen. Oxygen is necessary for burning. In addition to Oxygen and Nitrogen the atmosphere contains a small percentage of inert gases. These gases are Argon (Ar), Neon (Ne), Krypton (Kr), Xenon (Xe), Helium (He). An inert gas is colorless, odorless, and tasteless. It is not combustible, neither does it support combustion. It does not enter into chemical combination with other elements. Argon (Ar), which is present in greater proportion than the other inert gases, is used as a shield in inert gas welding.

ANSWER KEY

Lesson 1 

Put the words in correct order.

1. Welding is used for cutting metals.

2.Oscar Kjellberg invented a covered electrode.

3. It was used by automobile industry.

4. Automatic welding was invented by P.O.Nobel

5.The laser welding is finding in automotive metalworking applications and operations.

THE ARTICLE

Exercise 1.1

1. __a_ mask 4. _an__ electrode 7. _a__ gun

2. __a_ wire 5. _a nozzle__ 8. _a__ robot

3. _an__engineer6. _a__ plastic 9. _a__ welder

Exercise 1.2

1. This is a safety sign.

2. Where is the joint venture?

3. Lucy’s uncle is a welder.

4. Julie has got a mask.

5. This is a way to lab.

6. it’s a long way to the office.

7. There are a lot of warning signs in a factory.

8. Peter and Ben arebrothers.

9. Eifel Tower is in Paris.

10. Sphinx is in Egypt.

11. There’s some liquid on the floor.

12. Open the door, please!

13. These are our shoes.

14. The English like tea.

15. A small cable is mine.

16. The matches are dangerous for children.

17. A man in the green shirt is Sam.

18. He has a telephone and a computer.

19. John is not in the office today.

Lesson2 

Say True or False.

1. True3. True

2. False4. True

Write the sentences in chronological order

1.Small gold circular boxes were made by pressure welding lap joints together.

2.The Egyptians and people in the eastern Mediterranean area learned to weld pieces of iron together.

3.Arc welding with the carbon arc and metal arc was developed and resistance welding became a practical joining process.

4. Before 1900, hydrogen and coal gas were used with oxygen.

5.Stick electrodes were produced by dipping short lengths of bare iron wire in thick mixtures of carbonates and silicates, and allowing the coating to dry.

Listen and answer the questions:

1. Honor of opening of the phenomenon of the electro arc category belongs to Russian scientist academician V.V.Petrov.

2.The inventors of carbon-arc welding were Nikolay Benardos and Stanisław Olszewski.

3.Nikolay Benardos was the first to apply an electric arc to heat the edges of the steel sheets to the plastic state. He demonstrated a new way of metal compounds in Paris in 1881.

4..Nikolay Gavrilovich Slavyanov was a Russian inventor who in 1888 introduced arc welding with consumable metal electrodes.

Grammar Practice.

Exercise 2.1 Divide the following nouns into countable and uncountable.

Uncountable Countable

Furniture mountain

Coffee computer

Food list

bloodcountry

moneyleaf

advicelanguage

informationcrew

permission window

weatherholiday

progresswing

knowledgeluggage

airjob

waterkick

promotionaccommodation

workscenery

accidentprovision

traffic

Exercise 2.2 Write sentences in the plural as in the example.

Example: *This man is an engineer. – These men are engineers.*

1. This man is my brother. These men are my brothers. 2. That woman is my sister. Those women are my sisters. 3. This child is my son. These children are my son. 4. That laboratory is big. Those laboratories are big. 5. This building is white. These buildings are white. 6. This man is an engineer. These men are engineers.7. That woman is a doctor. Those women are doctors. 8. That girl is my sister. Those girls are my sisters. 9. This is a first-year student. These are the first-year students. 10. This engineer is a good specialist in his field. These engineers are good specialists in their fields. 11. My uncle has an expensive car. Our uncles have expensive cars. 12. This is a mess-room. These are mess-rooms. 13. I have a handy pen. We have handy pens. My pen is in my pocket. Our pens are in our pockets.14. There is a TV set in our room. There are TV sets in our rooms. 15. The teacher gave us an assignment. The teachers gave us assignments. 16. He wants to be an engineer. They want to be engineers.

Lesson 3 

Match the pictures with descriptions.

1- (b), 2-(a), 3-(d),4-(c)

Match the words to the descriptions.

1. Expansion- c) when something increases in size, number or importance.

2. Industry - f) the companies and activities involved in the process of producing goods for sale, especially in a factory or special area.

3. Manufacture - a) to produce goods in large numbers, usually in a factory using machines.

4. Space - e)the empty area outside the Earth atmosphere, where the planets and the stars.

5. Mechanical- d) describe machines or their parts

6. Corresponding- b) to match or be similar or equal

Listen and tick step-by-step topics.

1-b)aircraft; 2-d) automotive; 3-c)machine tools; 4-a) railroad

3.1. Put the phrases in the possessive case as in the example.

Example: *The son of our manager – our manager's son*

1) the house of Mr. Smith – Mr. Smith's house ; 2) a book of the student-student's book; 3) works of Nyuton- Nyuton's works;4) the bags of those women – women's bags; 5) the note-books of the children – children's note-books; 6) the cottage of my parents- parents' cottage; 7) professional skills of the engineer- engineer's professional skills; 8) the influence of the sun; 9) the atmosphere of the earth; 10) the arrival of the airplane; 11) the policy of the company; 12) the active duty of my brother- my brother's active duty; 13) the mother of Kate and Mary- Kate and Mary's mother ; 14) the work of the engineers – engineers' works ; 15) the times of Ivan the Terrible.- Ivan the Terrible's times.

3.2. Choose the correct item.

1. a) Liz's text-book

2.b)the cadets' hostel

3. b) the roof of the house

4.b) the Smiths's car

Lesson 4. 

Possible answers.

1. What about the physics of how the arc is created and how different gases affect the weld?To start with you need to think about the makeup of an atom. An atom is comprised of a nucleus formed of protons and neutrons which are orbited by negatively charged electrons. It is this flow of negative electrons which produces electricity.

2.Chemistry is a part of basic sciences and it is known as central science, because it is important to so many other fields of scientific study.Chemistry is useful if considering chemical engineering and certain modules in mechanical engineering.Different shielding gases have different ionisation properties and will affect the weld and electricity in a range of ways producing different results.

3.Drawings are the fundamental way of communication in engineering. It has developed over many years to physically describe their work, and you must be able to both read and write it to work in engineering design. Drawings show the shape, details and all the dimensions of a part or assembly.

4.There is a wide range of welding applications that needs mathematical aptitude. It does not matter if you are working in construction or fabrication sector, you have to have that fundamental understanding of measurement of size, cut, and suitable metal. In that case, math would be a good way to test your knowledge because all types of measurements are based on different computational fractions.

a)welding

b)row-materials

b)mixture

b)) mechanical properties

Listening.

1. The composition of the atmosphere is of primary importance in welding.

2.Air consists of about four parts by volume of Nitrogen to one part of Oxygen.

3.In addition to Oxygen and Nitrogen the atmosphere contains a small percentage of inert gases.

4.These gases are Argon (Ar), Neon (Ne), Krypton (Kr), Xenon (Xe), Helium (He). An inert gas is colorless, odorless, and tasteless.

Grammar practice.

Exercises 4.1

1. At Christmas (friends) often give Mary presents. At Christmas they often giveMary presents. 2. (Mary) likes her friends. She likes her friends. 3. I've got a tortoise. I feed it withvegetables. 4. (the bird) is singing lovely. It is singing lovely 5. (my sister and I) don't like to walk our dog. We don't like to walk our dog. 6. (the boy) overslept this morning and didn't have time to havebreakfast. He overslept this morning and didn't have time to have breakfast. 7. (you and I) are good friends, aren't you? We are good friends, aren't you? 8. (your brother and you) spend too much time playing computer games. You spend too much time playing computer games. 9. (Sam and John) went to see their friends. They went to see their friends. 10. (the students) live in the hostels. They live in the hostels.

Exercise 4.2. Choose the correct form of the pronouns in brackets.

1. What colour is the car? It is so far that I can't see (it) colour.2. They rarely drive to (their) office. They live near (it).3. The pupils of schools have less free time than the students of universities.(They) have a lot of homework to do. 4. Look at (my) new watch. Do you like (it)? 5. These books are (hers). Give (them/ theirs) to (her). 6. (Their) task is much more difficult than (yours) or (mine). 7. Why are (you) sitting here? It is not (your) desk, it is (mine). 8. My father is an engineer. (His) profession is very interesting. 9. (We) was the last turn. We have missed (its). 10. (Their) knowledge of French is not much more superior to (ours).

Glossariy

Kontaktli payvandlash-detallarni ular orqali o‘tuvchi elektr toki bilan qisqa muddat qizdirish va siqishkuchiyordamida plastic deformatsiyalash natijasida detallarning ajralmas metal birikmalarini hosil qilish texnologik jarayonidir.

Resistance welding - the formation of one-piece welded joint by heating the metal passing through electric shock and plastic deformation of the connection area under the influence of compressive force.

Bosim ostida payvandlashda tanavorlarni biriktirishga biriktiriladigan yuzalarini tashqi kuch qo‘yish hisobiga birgalikda plastic deformatsiyalash yo‘li bilan erishiladi.

Pressure welding - welding, whereby in the contact region of the two metal surfaces is deformed, thereby forming a weld. It is carried out at the expense of interaction (association of the electron shells) of atoms of the two metals welded surfaces. Thus the quality of the sealing could depend on many factors:

Chokli kontakli payvandlash bir-birni berkitib turuvchi nuqtalar qatorini hosil qilish yo‘li bilan zich birikma (chok) olish usulidir.