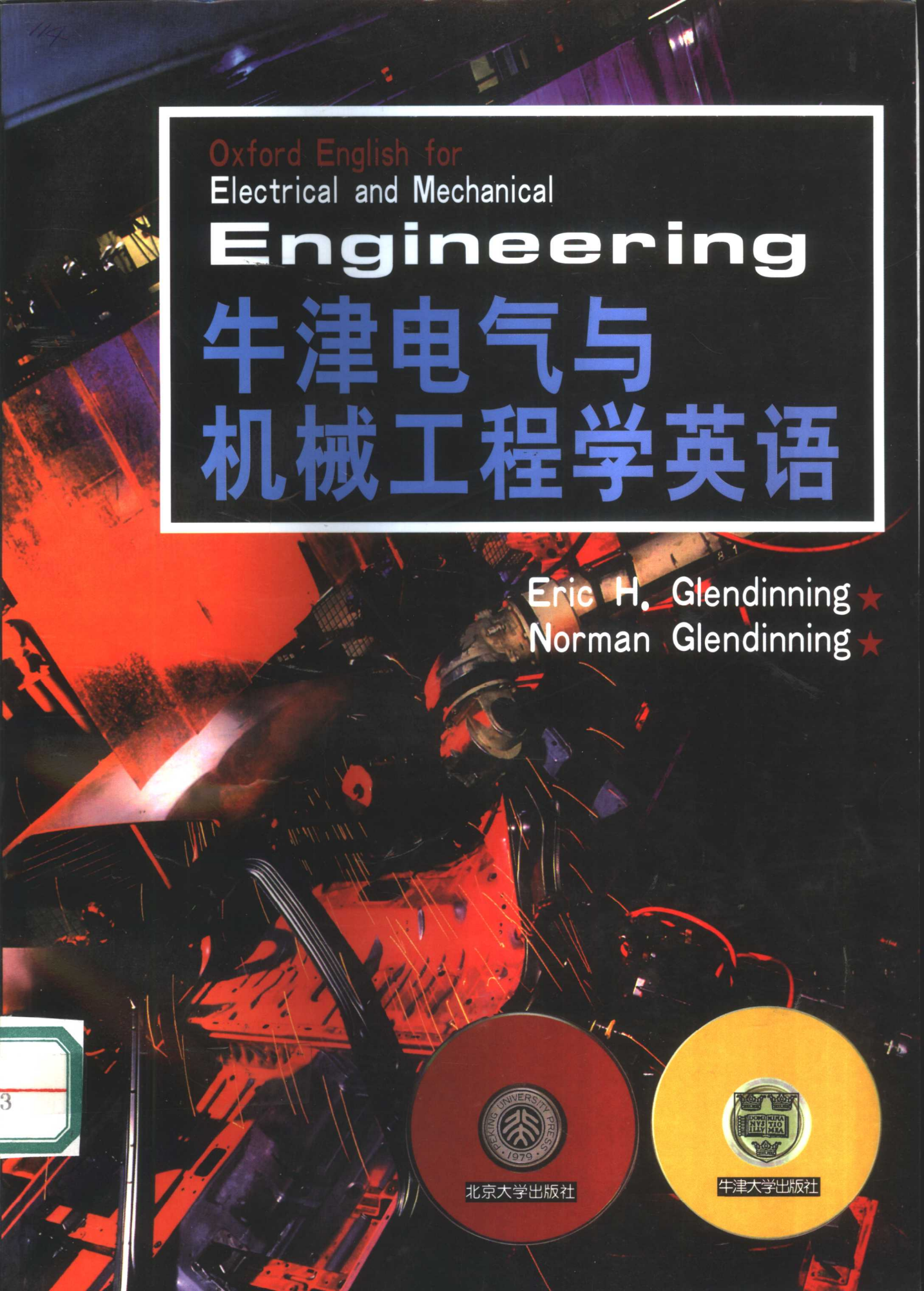
Oxford English for
Electrical and Mechanical
Engineering
牛津电气与
机械工程学英语
Eric H. Glendinning
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PEKING UNIVERSITY PRESS
1979
北京大学出版社
牛津大学出版社

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[英] Eric H. Glendinning
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著作权合同登记　图字:01-96-1051号

图书在版编目(CIP)数据

牛津电气与机械工程学英语/(英)格兰迪(Glendinning, E. H.),(英)格兰迪(Glendinning, N.)著. —北京:北京大学出版社,1998.8

牛津专业英语教材

ISBN 7-301-03632-9

Ⅰ.牛…　Ⅱ.①格…②格…　Ⅲ.①电气工业-英语-教材②机械工业-英语-教材　Ⅳ.H31

书　　名:牛津电气与机械工程学英语

著作责任者:[英]Eric H. Glendinning, Norman Glendinning

责任编辑:王原

标准书号:ISBN 7-301-03632-9/H·383

出 版 者:北京大学出版社

地　　址:北京市海淀区中关村北京大学校内

电　　话:出版部 62752015　发行部 62754140　编辑部 62752032

排 印 者:北京大学印刷厂印刷

发 行 者:北京大学出版社

经 销 者:新华书店

787×1092毫米　16开本　16印张　402千字

1998年8月第一版　1998年8月第一次印刷

定　　价:28.00元

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Introduction

1 Readership

Oxford English for Electrical and Mechanical Engineering is intended for:

- students of engineering in technical colleges, polytechnics, and universities
- technicians
- engineers

who want to improve their knowledge of English

- for study
- because they need to use English-language manuals, textbooks, and reference works
- to communicate with fellow students and engineers in other countries
- because they plan to work in an English-speaking country or a multinational company where English is a key language of communication

2 Objectives

Oxford English for Electrical and Mechanical Engineering aims at all-round skills improvement:

- listening – to understand native speakers, professionals, and students, talking about their work and study
  - to understand experts talking informally about aspects of engineering
- speaking – to communicate about engineering topics
- reading – to understand a wide variety of text including diagrams, tables, graphs, course brochures, and job advertisements
  - to compare different sources of information, written and spoken
- writing – to write simple descriptions and explanations of components and processes
  - to write study- and work-related letters

3 Authors

This book has two authors, an experienced ESP teacher and a practising engineer. This partnership should ensure that the book is methodologically sound, and at the same time that the technical content is correct and up to date. Care has been taken to ensure that recent important developments in engineering are included.

4 Textbook design

This book is designed to meet the requirements of both teachers and students. The authors recognize that very few English teachers have a specialist knowledge of engineering. They believe, however, that most ESP teachers have a general interest in their students' specialist field. The materials used in this book for presenting language items and developing skills are authentic texts, diagrams, and listening passages, at a level suitable for the interested lay person. The register is popular science and should not pose problems for teachers. The authors also recognize that the students who use this book want some exposure to the kind of texts used by their peers in English-speaking countries. Hence, the materials used for language practice and production have more specialist content. Tasks at the practice and production stages encourage students to combine knowledge of English and knowledge of their subject. Homework or self-study tasks have the most specialist content. The following diagram shows the relationship between activity, teacher/student focus, and text register in this book.

Activity	Teacher–Student focus	Register of text
Presentation	Teacher-led	Popular science
Practice	Student-centred Teacher-guided	Semi-technical
Production and self-study	Student-centred Teacher-monitored	Technical

5 Grading

The grading of *Oxford English for Electrical and Mechanical Engineering* is three-fold:

1 In terms of language, the book progresses from relatively simple language items such as *Comparison and contrast* to more complex, such as *Cause and effect*.

2 In terms of engineering, the book starts with materials and moves to robotics. Care has been

taken to ensure that the progression matches the normal teaching sequence of the subject.

3 In terms of the reader's career development, the listening texts progress from an interview with a student to one with a young professional while the reading-based units start with texts on *Choosing a course* (Unit 2) and end with *Applying for a job* (Unit 30).

The units divide into three sections which reflect this grading:

Units 1–10 revise language items which most readers will have been taught at an earlier stage in their English studies. The skills work covers basic strategies for effective reading, listening, speaking, and writing. The engineering topics are drawn from a typical first-year syllabus. Those interviewed are students.

Units 11–20 move into new areas of language such as cause and effect. The reader is introduced to more advanced strategies for decoding written and spoken English – for example, combining reading skills. The engineering topics are from a typical second-year syllabus. Those interviewed have started their working lives and include technicians and engineers. Authentic technical reading texts are introduced at the end of each unit.

Units 21–30 look at more difficult areas of language such as modality – certainty, necessity, etc. Skills work focuses on more demanding forms of speaking (making a presentation) and writing (summaries and explanations).
The engineering topics are drawn from a typical third-year syllabus. Those interviewed are mainly professional engineers.

6 Organization

This book is divided into thirty units. Each unit provides a minimum of two hours of work, and in some cases much more. Most units focus on familiar things which illustrate key engineering principles. The items chosen are well known to both teachers and students – for example, racing bicycles and refrigerators. Typically these units start with a general explanation for the lay person. From Unit 11, a more technical explanation of some aspect of the engineering topic is included for student self-study. Care has been taken to ensure that the items selected are up to date and match important topics in a typical engineering syllabus.

Although all units contain a mix of skills, Units 7, 10, 14, 20, and 24 are based on interviews. These units place more emphasis on developing listening skills. Those interviewed are students and young professionals from a range of occupations in the field of engineering. Both British and American English speakers are included.

Oxford English for Electrical and Mechanical Engineering also includes a glossary. The *Glossary of engineering terms and abbreviations* consists of brief definitions of all important technical terms in this book. It forms a mini-dictionary of engineering.
The Answer Book includes a Key and Tapescripts. The Key contains answers to all tasks. In some cases, answers other than those listed are possible. Although these aids should provide almost all the technical information you may require, the authors strongly advise that you form links with your colleagues in the engineering departments of your institute as their advice and support could prove most valuable.

7 The Units

Tuning-in

This section contains starter activities. It is intended to put students in the right mood for learning and to get them used to working in a group.

It is also designed to start them thinking about the topic of the unit and to encourage them to share both relevant language and knowledge of the topic.

Reading

Almost all units contain *Reading* sections. These sections introduce key reading skills such as making inferences – linking what you read with what you know.

The texts, written and spoken, used in this section are almost always accompanied by a graphic. These texts plus graphics are the main vehicle for teacher-led presentation activities.

Language study

This section highlights a key structure, function, or notion from the English of engineering. The context for presentation may be an extract from a *Tuning-in* text, a diagram, or a set of examples from which the student can infer the rule. Presentation is followed by comment, then practice activities. These practice activities focus on accuracy of language use.

Word study

This section is designed to help students deal with unfamiliar words and to cope with their growing specialist vocabulary.

Speaking practice

These activities are for fluency practice, not accuracy. Most of them are information-gap; some are opinion-gap. By exchanging information,

students are able to complete a diagram or table or to solve a problem. While this product is a means of gauging how successful the exchange has been, the real importance of these activities lies in the communicative process. Often the students will not understand each other at first. It is important that they develop strategies for coping with not understanding and not being understood. For example, they should be encouraged to ask for clarification when they do not understand and to try rephrasing when they are not understood.

Listening

In addition to the interviews in Units 7, 10, 14, 20, and 24, there is a lecture extract in Unit 5, and in Units 1 and 29 students are asked to infer the occupations of the speakers in a number of short extracts. Note that the tapescripts in this Answer Book are verbatim. They contain features of informal authentic speech such as false starts, incomplete sentences and occasional grammatical inaccuracies.

Writing

Writing is used both as a means of reinforcing language and to develop skills for describing, comparing, and explaining. This section also gives advice and practice in writing work-related letters, setting out a CV, and writing a job application.

Technical reading

These texts, introduced from Unit 12 onwards, contain more specialist content and are intended for individual study. They may be set for homework. The accompanying tasks, set by a practising engineer, check that the reader has understood the engineering concepts.

Part 1 Text
第一部分 课文

1 Engineering – what's it all about?

Tuning-in

Task 1

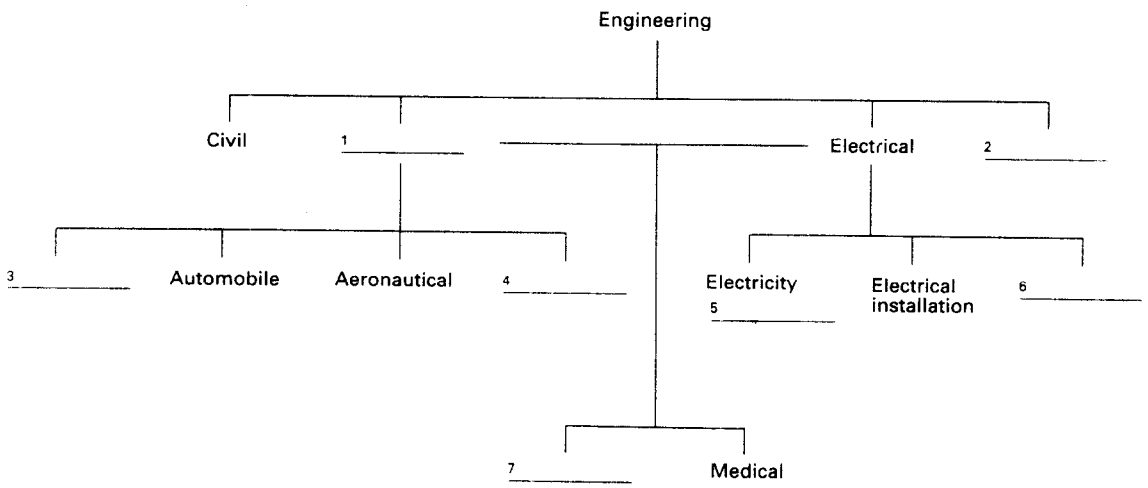
List the main branches of engineering. Combine your list with others in your group. Then read this text to find out how many of the branches listed are mentioned.

Engineering is largely a practical activity. It is about putting ideas into action. Civil engineering is concerned with making bridges, roads, airports, etc. Mechanical engineering deals with the design and manufacture of tools and machines. Electrical engineering is about the generation and distribution of electricity and its many applications. Electronic engineering is concerned with developing components and equipment for communications, computing, and so on.

Mechanical engineering includes marine, automobile, aeronautical, heating and ventilating, and others. Electrical engineering includes electricity generating, electrical installation, lighting, etc. Mining and medical engineering belong partly to mechanical and partly to electrical.

Task 2

Complete the blanks in this diagram using information from the text.

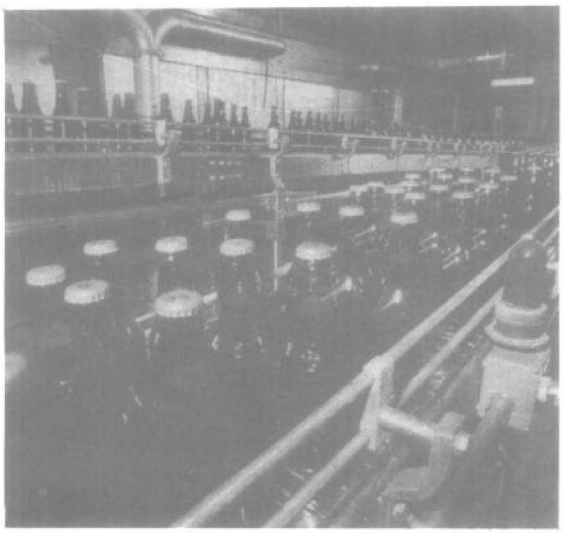


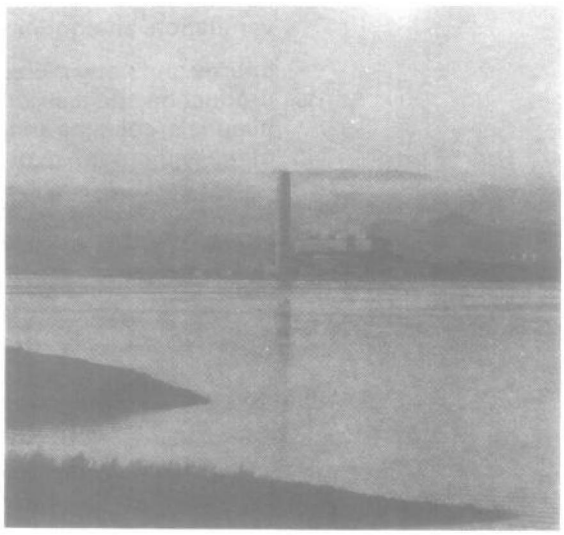
Reading *Introduction*

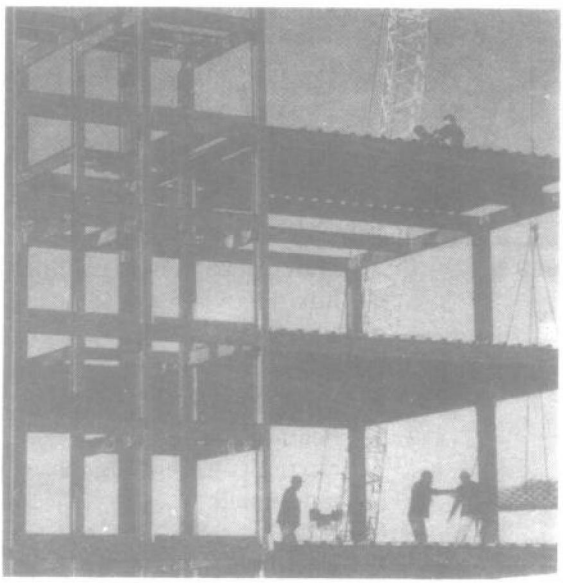
In your study and work, it is important to think about what you are going to read before you read. This helps you to link old and new knowledge and to make guesses about the meaning of the text. It is also important to have a clear purpose so that you choose the best way to read. In this book, you will find tasks to make you think before you read and tasks to help you to have a clear purpose when you read.

Task 3

Study these illustrations. They show some of the areas in which engineers work. Can you identify them? What kinds of engineers are concerned with these areas – electrical, mechanical, or both?







Task 4

Now read the following texts to check your answers to Task 3. Match each text to one of the illustrations above.

Transport: Cars, trains, ships, and planes are all products of mechanical engineering. Mechanical engineers are also involved in support services such as roads, rail track, harbours, and bridges.

Food processing: Mechanical engineers design, develop, and make the machines and the processing equipment for harvesting, preparing and preserving the foods and drinks that fill the supermarkets.

Medical engineering: Body scanners, X-ray machines, life-support systems, and other high tech equipment result from mechanical and electrical engineers combining with medical experts to convert ideas into life-saving and life-preserving products.

Building services: Electrical engineers provide all the services we need in our homes and places of work, including lighting, heating, ventilation, air-conditioning, refrigeration, and lifts.

Energy and power: Electrical engineers are concerned with the production and distribution of electricity to homes, offices, industry, hospitals, colleges and schools, and the installation and maintenance of the equipment involved in these processes.

Source: Adapted from *Turning ideas into action*, Institution of Mechanical Engineers, and *Engineering a Career*, Institution of Electronics and Electrical Incorporated Engineers.

Language study *deals/is concerned with*

What is the link between column **A** and column **B**?

A	**B**
mechanical	machines
electrical	electricity

Column **A** lists a branch of engineering or a type of engineer. Column **B** lists things they are concerned with. We can show the link between them in a number of ways:

1 *Mechanical engineering* ***deals with*** *machines.*
2 *Mechanical engineers* ***deal with*** *machines.*
3 *Mechanical engineering* ***is concerned with*** *machines.*
4 *Mechanical engineers* ***are concerned with*** *machines.*
5 *Machines* ***are the concern of*** *mechanical engineers.*

Task 5

Match each item in column **A** with an appropriate item from column **B** and link the two in a sentence.

	A		**B**
1	marine	**a**	air-conditioning
2	aeronautical	**b**	roads and bridges
3	heating and ventilating	**c**	body scanners
4	electricity generating	**d**	cables and switchgear
5	automobile	**e**	communications and equipment
6	civil	**f**	ships
7	electronic	**g**	planes
8	electrical installation	**h**	cars and trucks
9	medical	**i**	power stations

Word study *Word stress*

Words are divided into syllables. For example:

engine	en.gine
engineer	en.gin.eer
engineering	en.gin.eer.ing

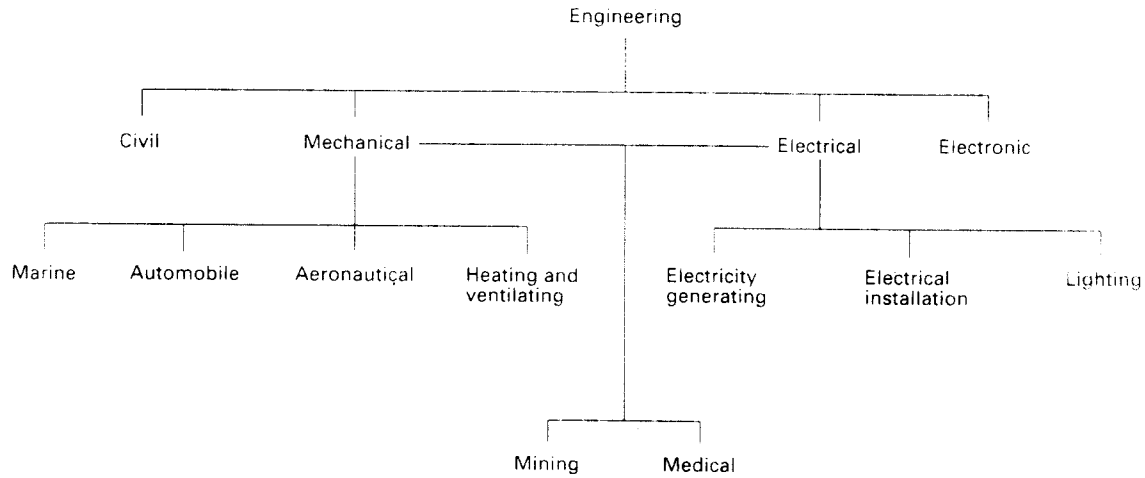
Each syllable is pronounced separately, but normally only one syllable is stressed. That means it is said more slowly and clearly than the other syllables. We say *'engine* but *engin'eer*. A good dictionary will show the stressed syllables.

Task 6 Listen to these words. Try to mark the stressed syllables.

1 machinery
2 mechanical
3 machine
4 install
5 installation
6 electricity
7 electrical
8 electronics
9 aeronautical
10 ventilation

Writing

Task 7 Fill in the gaps in the following description of the different branches of engineering using information from this diagram and language you have studied in this unit.



The main branches of engineering are civil, [1]_____, [2]_____, and electronic. Mechanical engineering is [3]_____ [4]_____ machinery of all kinds. This branch of engineering includes [5]_____, automobile, [6]_____, and heating and ventilating. The first three are concerned with transport: [7]_____, cars and planes. The last [8]_____ with air-conditioning, refrigeration, etc.

Electrical engineering deals with [9]_____ from generation to use. Electricity generating is concerned with [10]_____ stations. Electrical installation deals [11]_____ cables, switchgear, and connecting up electrical equipment.

Two branches of engineering include both [12]_____ and [13]_____ engineers. These are mining and [14]_____ engineering. The former deals with mines and mining equipment, the latter with hospital [15]_____ of all kinds.

Listening

Task 8 Listen to these short extracts. To which branch of engineering do these engineers belong?

Task 9 Listen again. This time note the words which helped you decide on your answers.