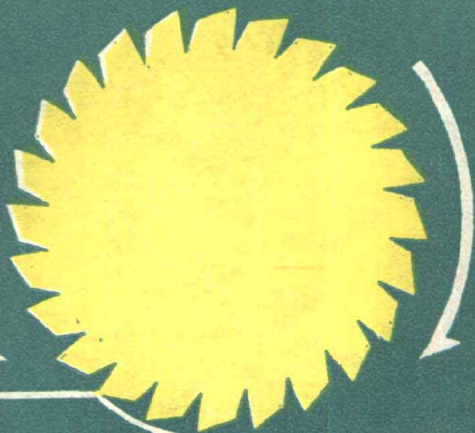


高等学校试用教材



# 英语

第三册（机械动力类）

上海工业大学外语教研室 主编

第三册（机械动力类）

上海工业大学外语教研组 主编

高等教育出版社

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# 英 语

第 三 册



上海工业大学英语教研室主编

高等教育出版社

本书系根据1977年高等学校工科外语教材编写会议的要求编写的《英语》第三册（机械、动力类），可接续大连海运学院、上海交通大学、天津大学分别主编的三种《英语》教材中的任何一种。全书共十五个单元，每单元包括“阅读和理解”、“词汇学习”、“结构学习”和“自由阅读”四部分，其中前三个部分各配有练习。书后有附录及词组、词汇表。本书可供高等学校工科机械、动力类专业学生使用。

高等学校试用教材

英 语

第三册

（机械、动力类）

上海工业大学外语教研室主编

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## 编者说明

本书系全国高等工科院校英语教材第一册、第二册的后续教材,供机械、动力类各专业学生使用,旨在培养阅读与本专业有关的英语书刊的能力,同时学习一些科技英语书刊中常用的表达方法。

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“词汇学习”介绍科技文章中比较积极的词汇和词组,着重介绍它们在科技文章中的各种用法。

“结构学习”是对以前所学基本语法知识的归纳和加深,提高学生对这些知识的运用能力,从而达到正确理解原文并为能用英语进行写作打好初步的基础。

“自由阅读”每单元有两篇。教师可根据学生的不同情况选用。“自由阅读”不列分课词汇表,以培养学生自己查阅辞典进行阅读的能力。

参加本书编写的单位是上海工业大学(主编)、上海交通大学、合肥工业大学。参加本书审阅的单位是哈尔滨科学技术大学(主审)、华中工学院(主审)、重庆大学、甘肃工业大学、北京工业大

学、昆明工学院、青海工农学院。

本书在编写过程中得到兄弟单位许多同志的帮助，在此表示衷心的感谢。

由于编者水平有限，对于书中错误或不当之处，请批评指正。

编者：戴浩中(主编) 冯玉柱

张彭年 张广濂 张锦敏

一九七九年四月

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## Unit 1

### *Reading and Comprehension*

## MECHANICAL ENGINEERING

<sup>1</sup>Engineering is an applied science. <sup>2</sup>The engineer has a knowledge of the mathematical and natural sciences gained by study, experience, and practice which is applied to develop ways to utilize, economically, the materials and forces of nature for the benefit of mankind. <sup>3</sup>The engineer is a problem solver, using knowledge and ability to devise or improve the solution to technological problems. <sup>4</sup>The engineer is concerned with learning why a system or concept operates and how it might be directed toward useful, beneficial products.

<sup>5</sup>Perhaps the broadest of the engineering disciplines, mechanical engineering is concerned with the application of science and technology in the solution of the countless problems facing our increasingly complex world.

<sup>6</sup>Mechanical engineers are innovators, developing devices and systems to perform useful services. <sup>7</sup>They are involved in the conception, planning, design, analysis, testing, production, and utilization of facilities, systems, and machines. <sup>8</sup>They are concerned with the production and use of energy, with combustion processes, environmental control, industrial pollution, materials processing

and handling, the design of transportation vehicles and propulsion systems, and the safety of products. <sup>9</sup>The field of mechanical engineering may be divided into two major areas: thermosciences and design.

<sup>10</sup>In the thermosciences area, the mechanical engineer is concerned with thermodynamics, fluid mechanics, and heat transfer—the behavior of solids, liquids, and gases—in engineering applications. <sup>11</sup>Emphasis is placed on energy conversion systems, energy analyses, the design and development of engines and propulsion systems, and the use of energy.

<sup>12</sup>In the design area, mechanical engineers are concerned with the development of new and improved labor-saving devices and machines. <sup>13</sup>They work toward the development of devices to transmit and control mechanical power for useful purposes. <sup>14</sup>Emphasis is placed on machine design, mechanisms, kinematics, and automatic controls. <sup>15</sup>Mechanical engineers, for example, have had a hand in the design of a great variety of commodities. <sup>16</sup>They have also been instrumental in the development of machines to produce these commodities.

(From *Introduction to Engineering Including FORTRAN Programming*, 1978, Leroy S. Fletcher and Terry E. Shoup)

## NEW WORDS

1. mathematical

[mæθi'mætikəl] a. 数学的

~ly ad. 数学上

2. economical [i:kə'nɒmikəl]

a. 经济的, 节约的

~ly ad. 经济地, 节约地

3. benefit ['benifit] n. 利益

v. 受益; 有利于

4. mankind [mæn'kaind] *n.*  
人类
5. solver ['sɒlvə] *n.*  
解决问题的人
6. devise [di'vaiz] *v.*  
想出(办法等);  
作出(计划等);设计(机器等)
7. solution [sə'lu:ʃən] *n.*  
解答;解决办法;溶液
8. technological [tek'nɒ'lɒdʒikəl]  
*a.* 技术的,工艺的  
~ *ly ad.* 技术上,工艺上
9. concept ['kɒnsept] *n.* 概念
10. direct [di'rekt]  
*v.* 指向,对准;指导,指引  
*a.* 直接的;径直的  
*ad.* 直接地;径直地  
~ *ly ad.* 直接地;径直地
11. beneficial [beni'fifəl] *a.*  
有益的
12. broad [brɔ:d] *a.*  
宽的,广的;概括的  
~ *ly ad.* 广阔地;概括地
13. discipline ['disiplin] *n.*  
训练;学科;专业
14. countless ['kauntlis] *a.*  
数不清的
15. face [feis] *v.* 面对,面向  
*n.* 脸;面,表面
16. increasing [in'kri:sɪŋ] *a.*  
不断增加的
- ~ *ly ad.* 愈加,越来越
17. complex [kəmpleks] *a.*  
复杂的
18. innovator [ɪ'nəuveɪtə] *n.*  
革新者
19. service ['sɜ:vɪs] *n.*  
服务;维修;使用;作用;工作
20. conception [kən'sepʃən] *n.*  
构思,想象;概念,想法
21. analysis [ə'neɪləsɪs] *n.* 分析  
(*pl.* analyses [ə'neɪləsɪ:z])
22. test [test] *n. & v.* 试验,测试
23. utilization [ju:tilaɪ'zeɪʃən]  
*n.* 利用
24. facility [fə'sɪlɪti] *n.*  
容易;便利;设备(常用 *pl.*)
25. combustion [kəm'bʌstʃən]  
*n.* 燃烧
26. industrial [ɪn'dʌstriəl] *a.*  
工业的  
~ *ly ad.* 工业上
27. pollution [pə'lu:ʃən]  
*n.* 污染
28. safety ['seɪfti] *n.* 安全
29. propulsion [prə'pʌlʃən] *n.*  
推进
30. thermoscience  
['θɜ:məu'saɪəns] *n.* 热学
31. thermodynamics  
['θɜ:məu'daɪ'næmɪks] *n.*  
热力学

- |   |   |
|---|---|
| <p>32. <b>mechanics</b> [mi'kæniks] <i>n.</i><br/>力学; 机构学; 机构</p> <p>33. <b>transfer</b> [træns'fə:] <i>v.</i><br/>[ 'trænsfə(:) ] <i>n.</i><br/>传递, 输送, 转移</p> <p>34. <b>emphasis</b> ['emfəsis] <i>n.</i><br/>重点; 强调</p> <p>35. <b>conversion</b> [kən'veɪʃən] <i>n.</i><br/>转变, 转换</p> <p>36. <b>save</b> [seiv] <i>v.</i> 节省, 节约; 救</p> | <p>37. <b>mechanism</b> ['mekənizəm]<br/><i>n.</i> 机构; 机构学; 作用原理</p> <p>38. <b>kinematics</b> [kaini'mætiks]<br/><i>n.</i> 运动学</p> <p>39. <b>commodity</b> [kə'mɒditi] <i>n.</i><br/>商品</p> <p>40. <b>instrumental</b> [instru'mentl]<br/><i>a.</i> 作为手段的; 起作用的;<br/>有帮助的</p> |
|---|---|

## PHRASES AND EXPRESSIONS

- |  |   |
|--|---|
| <p>1. <b>applied science</b></p> <p>2. <b>for the benefit of</b></p> <p>3. <b>direct ... toward</b></p> <p>4. <b>be involved in</b></p> <p>5. <b>transportation vehicle</b></p> <p>6. <b>heat transfer</b></p> <p>7. <b>place emphasis on</b></p> <p>8. <b>work toward</b></p> <p>9. <b>have a hand in</b></p> | <p>应用科学</p> <p>为...的利益</p> <p>以...为目标; 把...转变为</p> <p>包含在...中; 与...有关; 专心于</p> <p>运输车辆</p> <p>传热; 传热学</p> <p>强调, 着重</p> <p>努力达到, 努力做到</p> <p>参与; 与...有关</p> |
|--|---|

## NOTES

1. *Perhaps the broadest of the engineering disciplines, mechanical engineering is concerned with ...*  
 机械工程也许是工程学科中内容最广的一门学科, 它涉及...  
 斜体部分是 **mechanical engineering** 的同位语。同位语一般在它所说明的名词之后, 例如上句可以写成: **Mechanical engineering, perhaps the broadest of the engineering disciplines, is concerned with ...**
2. **In the thermosciences area, the mechanical engineer is concerned**

with thermodynamics, fluid mechanics, and heat transfer — *the behavior of solids, liquids, and gases* — in engineering applications.

在热学方面, 机械工程师在工程应用中接触到热力学、流体力学和传热学, 即固体、液体和气体的性能。

斜体部分是 *thermodynamics, fluid mechanics, and heat transfer* 的同位语。

### EXERCISE 1: True and false statements

Say which of the following statements are true and which are false.

- 1) The engineer develops ways to utilize, economically, the materials and forces of nature to gain a knowledge of the mathematical and natural sciences.
- 2) The engineer is one who is involved in the solution of technological problems.
- 3) Perhaps mechanical engineering deals with a wider range of problems than any other branches of engineering.
- 4) Mechanical engineers do design new machines, but do not solve the problems concerning their production.
- 5) Mechanical engineers are involved in the production and use of energy.
- 6) Thermosciences are concerned with the behavior of solids, liquids, and gases.
- 7) The design and development of engines and propulsion systems is one of the main tasks of thermosciences.
- 8) Mechanical engineers are concerned with the development of machines to produce commodities, but they do not design the commodities themselves.