土木工程英语

English for Civil Engineering

Keys and References

FOREIGN LANGUAGE TEACHING AND RESEARCH PRESS

Unit 1 Introduction to civil engineering

Section A

Reading comprehension

1) traced
2) sophisticated
3) maintaining
4) adapting
5) diverse
6) Structural
7) Geotechnical
8) utilize
9) supervise
10) maintenance

Language focus

1

1. C, e
2. F, f
3. B, g
4. D, h
5. E, b
6. A, c
7. H, a
8. G, d

1. bid
2. grading
3. process
4. discipline
5. column
6. foundations
7. loads
8. beam

2

1. advanced
2. remains
3. ancientness
4. surprising
5. varied
6. parts
7. qualities
8. polluted

3

1. C 建筑规范
2. D 运土
3. F 建设项目
4. A 承重结构
5. B 建筑工程
6. E 悬索桥

4

Civil engineering is a branch of engineering that deals with the design and construction of structures. Depending on the type of project, civil engineering is subdivided into a number of technical specialties. They are structural engineering, water resources engineering, geotechnical engineering, environmental engineering, transportation engineering, etc. Each specialty has its special purposes. But they must be coordinated in order to accomplish a project. Civil engineering offers a particular challenge because almost every structure or system that is designed and built by civil engineers is unique. One structure rarely duplicates another exactly.

Unit 2 Civil engineering materials

Section A

Pre-reading

2

1. mud brick
2. recycled plastic
3. straw bale
4. rammed earth
5. bamboo
6. grassrcrete

Reading comprehension

1

clay; twigs; synthetic; concrete; calamity; renewable; sustainable; responsible

2

1. F
2. G
3. B
4. E
5. D
6. A
7. C

Language focus

1

1. B 砖
2. G 钢筋
3. F 石灰

4. A 混凝土
5. D 可拉长的
6. H 水泥
7. C 粘土
8. E 合成的

2

1. split up
2. substitutes
3. plants
4. generate
5. packed
6. tough
7. consists of
8. takes in

3

1. sustainable
2. ubiquitous
3. calamity
4. renewable
5. affordable
6. retain
7. insulation; insulating
8. biodiversity

4

It is necessary for civil engineers to be familiar with the properties of the building materials in the construction site. Civil engineering materials can be natural and man-made, including cement, metals, timber, concrete, bitumen, etc. Besides these traditional materials, many new types of building materials are being investigated and developed, and are being applied gradually. Now green civil engineering materials and even eco-materials for engineering are recommended, for the consideration of sustainable development. These materials have the benefits of saving energy, protecting the environment and minimizing the harm to human health.

Unit 3 Civil engineering structure

Section A

Pre-reading

1

1. Taipei 101
2. CCTV Headquarters
3. Pisa Cathedral
4. Burj Khalifa Tower
5. Taj Mahal
6. Shanghai Tower

2

1. G
2. F
3. E
4. D
5. C
6. B
7. A
8. H

Reading comprehension

1. The design group came up with their design idea and conquered the difficulties in the design process.
2. The constructers worked together to solve the welding problem of the new, high-strength steels and the construction steps are introduced.

Language focus

1

concrete	具体的	混凝土的
assemble	集合	组装
accommodate	使适应	容纳
column	栏；专栏	柱；柱形物
bidding	吩咐；要求	投标；出价
flexibility	灵活性	弹性

1. column
2. concrete
3. assembled
4. flexibility.
5. accommodate

2

1. H 伸缩屋顶
2. G 钢结构
3. F 聚合物膜
4. E 外壳
5. D 建筑物
6. B 抗压强度
7. C 热膨胀
8. A 震烈度

3

1. originated
2. ceramics
3. beams
4. transparent
5. weld
6. withstand
7. contraction
8. crumble
9. unveil
10. submissions

4

In the summer of 2008, China hosted the Beijing Olympics. To prepare for the Olympics, Beijing had planned a lot of new buildings, including stadiums, hotels for the Olympics fans, and the Olympic village where the athletes and coaches would live. Among these new buildings, some are unique compared with other buildings in the world, for example, the National Stadium which is called the “Bird’s Nest”. Even though it’s made of steel and concrete, the stadium looks just like a giant nest made with branches.

Unit 4 Bridge and tunnel construction

Section A

Pre-reading

1

1. D
2. E
3. F
4. A
5. B
6. C

2

1. arch
2. beam
3. cantilever
4. truss
5. suspension
6. cable-stayed

Reading comprehension

1) suspension
2) iconic
3) supervised
4) criteria
5) maintenance
6) towers
7) clearance
8) falsework
9) net
10) budget

Language focus

1

deck	甲板	桥面
clearance	清除	净空
primer	入门指南	底漆
drape	悬挂	挂接
anchor	抛锚	使固定

1. deck
2. primer
3. draped
4. clearance
5. anchored

2

1. spectacular
2. variation
3. advanced
4. force
5. supported
6. renovated

3

1. cantilevers
2. initial
3. dynamic
4. criteria
5. rigorously
6. maintenance
7. seismic
8. icon

4

The Golden Gate Bridge is one of the longest suspension bridges in the world. The construction of the bridge began in 1933 and the bridge was open in May, 1937. The construction cost as much as about $34 million. It extends 1,280 meters between supports. Chief Engineer Joseph Strauss demanded rigorous safety protection measures be taken during the construction process, including the use of safety helmets and special glasses to protect the workers' eyes – a first in bridge construction. And a special safety net was suspended under the bridge. Despite all these measures, 11 workers still died in the construction of the bridge.

Unit 5 Civil engineering project management

Section A

Pre-reading

1

2

Reading comprehension

1. (4) 2. (3) 3. (9) 4. (11) 5. (3) 6. (8) 7. (7) 8. (1) 9. (6) 10. (9)

Language focus

1

Affixes	Meaning	More examples
-ship	to form *n.* (a particular art or skill)	craftsmanship, leadership, scholarship
dis-	to form words with the opposite meaning	discourteously, discontentedly, disinterestedly
-ee	to form *n.* (someone who is being treated in a particular way)	trainee, interviewee, employee
-ness	to form *n.* (state, quality)	togetherness, loneliness, hardness
-ly	to form *adv.* (in the specified manner)	courageously, courteously, conspicuously
under-	to form words that express the idea that there is not enough of something	undercharge, undernourished, understate, underachieve
co-	to form *v.* or *n.* (sharing or doing things together)	cooperate, coexist, coauthor
-less	to form *adj.* (without)	hopeless, worthless, careless
-ency	to form *n.* (state, quality)	presidency, consistency, residency

1. simultaneously 2. coordinate 3. Contingency 4. underbid
5. workmanship 6. flawless 7. Trustees 8. proportioned

2

1. *n.* 大自然
2. *n.* 性质
3. *n.* 海拔
4. *n.* 立面；正视图；立视图
5. *n.* 佣金；回扣
6. *n.* 委员会
7. *vt.* 授予；颁发
8. *n.* 给予（合同）

3

1. perfected
2. indigenous
3. feature
4. admit
5. understanding
6. deal

4

A wide variety of factors can present potential risk in a construction project: site conditions, design assumptions, public regulations, worker safety, and environmental concerns and regulation, to name a few. As a result of the increasing number of risks, owners start to share them by requiring that a builder be at least partially liable in the event of a loss due to these factors. It is therefore the project manager's job to analyze risks going into the project so that both the builder and the client are aware of them and can reach a mutual agreement on how the risks will be shared. Once construction is underway, the project manager also must try to mitigate the risks by carefully selecting materials and equipment and closely monitoring the work being performed.

Unit 6 Geomatics technology application

Section A

Pre-reading

1

1. GPS：Global Positioning System 全球定位系统
   DEM：Digital Elevation Model 数字高程模型
   RTK：real-time kinematic 实时动态定位
   GIS：Geographic Information System 地理信息系统
   GNSS：Global Navigation Satellite System 全球导航卫星系统

2. a. GPS, RTK, GNSS
   b. GIS, DEM

Reading comprehension

1. obstructed; integrated; conventional
2. on-board; eliminating
3. positioning; real-time; dramatically
4. vibrations; loads; vibrations; gusts; cyclic
5. visibility; susceptible; reflected
6. located; monitored; amplitude

Language focus

1

1. C, b
2. A, c
3. D, a
4. B, e
5. E, d

1. displacement
2. survey
3. elevation
4. coordinates
5. pile

2

1. incorporated
2. property
3. stages
4. direction
5. applied
6. style

3

1. B 控制点
2. D 结构变形
3. E 高程控制
4. G 位移监测
5. C 大地测量
6. A 桩定位
7. F 地层塌陷

4

1. subway
2. subnormal
3. subspecies
4. subsoil
5. subtropical

5

The explosive growth of GPS applications and the economics of GPS make it the primary choice for sustainable geodetic operations. GPS supports the accurate mapping and modeling of the physical world – from mountains, rivers, streets and buildings to utility lines, and other ground conditions of Earth's resources. Features measured with GPS can be displayed on maps and in Geographic Information Systems (GIS). Moreover, unlike conventional techniques, GPS surveying is not bound by constraints such as line-of-sight visibility between survey stations.

Unit 7 Water resources engineering

Section A

Pre-reading

1

Residential drains	Council drains	Regional drains	Rivers and creeks	Bays
(1)	(2)	(3)	(4)	(5)

Reading comprehension

1) impervious
2) source
3) managed
4) erosion
5) convey
6) discharge
7) runoff
8) filtered
9) slope
10) environment

Language focus

1

1. F
2. A
3. D
4. C
5. G
6. H
7. E
8. B

2

1. B 水落管
2. F 人行道；小路
3. E 地下水
4. A 泛滥；溢出
5. C 径流
6. D 水路

1. overflow
2. runoff
3. footpath
4. groundwater
5. waterway
6. downpipes

3

1. impervious
2. Permeable
3. nuisance
4. filter
5. detain
6. underlain
7. impeding
8. residue

4

For thousands of years, city planners have designed aqueducts to collect water somewhere on the outskirts of the city, and then send it with gravity into the city. Now almost 80% of California is in extreme drought. Some urban designers in LA see water scarcity as a challenge, also as an opportunity. There's a call now to build cities like sponges. Rain water is a precious resource which could be captured, turned into drinking water or used for irrigation. This new design would help catch as much rain as possible.

Unit 8 Architectural environmental engineering

Section A

Pre-reading

2

1. B
2. H
3. E
4. F
5. G
6. D
7. C
8. A

Reading comprehension

1) numerous
2) popularity
3) practice
4) integrated
5) inevitable
6) lower
7) utility
8) lifestyle

9) value
10) maximize

Language focus

1

utility	效用；实用	公用事业
site	地点；位置	建筑工地
grid	格子；栅栏	电网
insulation	隔离；孤立	绝缘（体）
renovation	革新	整修
process	过程	工序

1. site
2. insulation
3. renovation
4. grid
5. process
6. utility

2

1. D 市政公用事业
2. E 可持续发展
3. B 空置率
4. C 建筑工程
5. G / J 空调 / 漏气
6. F 净零能耗建筑
7. H 绿色建筑
8. I 通风系统
9. J / G 漏气 / 空调
10. A 环境保护

3

1. outperform
2. vacancy
3. sprawls
4. complement

5. specify
6. ventilation
7. leaking
8. durability
9. sustainable
10. infrastructure

4

At the beginning of the 21st century, green building is one task of enforcing sustainable development strategy, which has already been accepted by a lot of countries in the world. In carrying out green environment programs, we not only lay emphasis on creating landscapes but also attach importance to the integration of environment and ecology. The sustainability and naturalization of green building are the tendency of greening work. The urban living environment in the future will be greened overall, and the world will be one without pollution. The new industry will be one part of the natural circulation, and it will not exploit the nature or destroy the nature.

Section B

Task

1, 5