METU
English Proficiency Exam
A Guide for Test Takers

With Sample Items and Practice Materials

School of Foreign Languages
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Foreword

This is the 2017 edition of the METU English Proficiency Examination booklet, which is the result of the collaborative efforts of Research & Development Unit, and the Proficiency Committee (2016-2017).

The English Proficiency Examination (METU-EPE) has been re-designed to assess METU students’ and other test-takers’ competency in Reading, Listening, and Writing through tasks that correspond to real-world activities in academic programs at METU. This booklet was prepared to familiarize test-takers with the new task types and provide practice material.

Director
School of Foreign Languages
November, 2017
PURPOSE OF THE EPE

The EPE is an examination that assesses the English language proficiency level of candidates who wish to study at an undergraduate or graduate level degree program at Middle East Technical University (METU). The purpose of this examination is to determine whether test takers’ proficiency in English is sufficient to perform communicative tasks in English, i.e. to fulfill the requirements of courses at academic programs with relative ease. Thus, the examination is concerned with assessing test-takers' ability to understand and respond to written and oral academic texts, to comprehend interactions in the classroom and campus settings, as well as to assess their competence in producing written texts of varying lengths.

ADMINISTRATION OF THE EPE

The examination is administered in two separate sessions on the same day: Session I and Session II. Test-takers are expected to take both sessions. The scores obtained from the two sessions make up the final EPE score.

The morning session, Session I, lasts approximately 120 minutes and includes the following sections:

- Listening
- Careful Reading
- Vocabulary

The afternoon session, Session II, lasts approximately 105 minutes and includes the following sections:

- Search Reading
- Writing
- Performance Task
FORMAT OF THE EPE

There are six separate sections in the EPE: Listening, Careful Reading, Search Reading, Vocabulary, Writing and Performance. The points allocated to each section and the time allowed are given in Table 1.

Table 1 The EPE content

<table>
<thead>
<tr>
<th>Section</th>
<th>Points</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listening</td>
<td>30 Questions</td>
<td>30</td>
</tr>
<tr>
<td>Careful Reading</td>
<td>32 Questions</td>
<td>24</td>
</tr>
<tr>
<td>Search Reading</td>
<td>8 Questions</td>
<td>6</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>20 Questions</td>
<td>10</td>
</tr>
<tr>
<td>Writing</td>
<td>1 Task</td>
<td>10</td>
</tr>
<tr>
<td>Performance</td>
<td>1 Task</td>
<td>20</td>
</tr>
</tbody>
</table>

Note: Please be warned that, for research purposes, there may be unscored questions in addition to the scored questions in the exam. Therefore, the number of questions in your exam booklet may be more than the number of questions given for any section of the test in Table 1. The duration of the exam will be extended accordingly. You will not know which questions are unscored. You are expected to answer all the questions to the best of your ability. Your exam result will be based on your performance on the scored questions only.
SCORING PROCEDURES AND GUIDELINES

The Morning Session comprises selected response (multiple-choice, matching, and multiple-matching) type questions, which are machine scored.

The Afternoon Session comprises constructed response type questions which are manually scored by a group of experienced raters in accordance with an answer key or rating scale. The raters go through standardization before each grading session. Each paper is graded by two raters, and by a third rater if there need be.

Reporting of the METU-EPE Scores

The score obtained from the entire exam will be announced in approximately 5 days as of the exam day. Those who would like to receive an exam report card may do so by applying to the Registrar’s Office after the exam results are officially announced.

The scores are announced on the web page of the School of Foreign Languages: http://www.dbe.metu.edu.tr/prf/
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LISTENING

The listening section of the examination tests your ability to understand moderately complex, formal to semi-informal communication and ideas spoken at a slow to normal rate.

In this section of the examination, you are expected to demonstrate your ability to

- understand spoken language on both familiar and unfamiliar topics from social, academic or vocational life,
- understand main ideas, supporting details, implied meanings in standard English in texts on both concrete and abstract topics,
- understand extended speech and complex lines of argument clearly signposted by discourse markers,
- identify attitude, mood, tone, viewpoints,
- understand paraphrasing, and
- understand meaning based on rhythm, intonation and stress.

<table>
<thead>
<tr>
<th>Summary: 10-13 Talks, 30 Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of talks</strong></td>
</tr>
<tr>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Brief Talks</td>
</tr>
<tr>
<td>Instructions / Announcement</td>
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<tr>
<td>Conversations</td>
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<tr>
<td>Discussion</td>
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<tr>
<td>Lectures</td>
</tr>
<tr>
<td>Brief Talks</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td><strong>Task</strong></td>
</tr>
</tbody>
</table>
| **Purpose** | To assess the test taker's ability to  
- understand the topic  
- understand the main idea  
- understand the purpose  
- predict the content of a talk |
| **Length of each episode** | ~1 minute |
| **Number of episodes** | 4 |
| **Number of questions in each episode** | 1 |
| **Question type** | Multiple choice with three options |
| **Weighting** | 1 point for each correct response |
Brief Talk

Sample script 1:

We've seen it all in documentaries and dramas. The Viking Age begins as groups of Vikings leap ashore from their long-ships, in a lightning raid against defenseless people. And they leave the foreign lands as quickly as they arrive, loaded up with slaves and booty, whatever valuables they could find in the small settlements on the shores of the British Isles. These hit-and-run attacks continued for decades. But at one point in history, those visitors from Scandinavia began to trade and negotiate on English soil. They even founded settlements there. Viking attacks were violent for sure. But stories about their contact with English towns seem oversimplified. Contemporary evidence shows that Viking involvement in social life on these islands was more significant than that depicted on the screen.

Sample question 1:

What is the topic of the talk?

a) Vikings' motivation to attack the British Isles
b) The relations between the Vikings and the British
c) Britain’s reaction to violent attacks by the Vikings

Answer:

a) The text mentions the outcomes of the attacks – slaves and booty – which may be taken as sources of motivation. However, as one listens, the story evolves and it becomes clear that there is more in the text than just the attacks. (X)
b) The text starts with descriptions of Viking attacks, then talks about how Vikings become involved in social life in England. This option gives a general statement which is the topic of the talk. (√)
c) There is no mention of how Britain reacted to Viking attacks in the text. (X)
Asteroids are our oldest and most numerous cosmic neighbours. Teams of scientists across the globe are searching for these objects, discovering new ones every day, steadily mapping near-Earth space. And the paths of some asteroids can now be predicted with incredible precision. Now, it has only been within my lifetime that asteroids have been considered a credible threat to our planet. And since then, there’s been a focused effort underway to discover and catalogue these objects. In 2010, a historic milestone was reached. Astronomers discovered over 90 percent of asteroids bigger than one kilometre across — objects capable of massive destruction to Earth. But the job's not done yet. An object of 140 meters or bigger could decimate a medium-sized country. So far, we've only found 25 percent of those. So we must keep searching the sky for near-Earth asteroids. If we found a hazardous asteroid with significant early warning, we could nudge it out of the way. Unlike earthquakes, hurricanes, or volcanic eruptions, an asteroid impact can be precisely predicted and prevented. What we need to do now is map near-Earth space. We must keep searching the sky.
### Announcement / Instructions

<table>
<thead>
<tr>
<th>Task</th>
<th><strong>Announcement / Instructions</strong> is an audio recording. You will listen to a monologue and answer questions.</th>
</tr>
</thead>
</table>
| Purpose | To assess the test taker’s ability to  
- understand announcements and instructions  
- follow the main point of a talk  
- identify details of a talk  
- recognize emphasis through intonation and stress  
- follow detailed directions  
- follow the stages of a process  
- understand instructions well enough to follow them without making mistakes |
| Length of each episode | ~2 minutes |
| Number of episodes | 1 |
| Number of questions in each episode | 2 |
| Question type | Multiple choice with three options |
| Weighting | 1 point for each correct response |
Announcement

Sample script 3:

Good morning everyone. I’d like to start today’s lecture with an announcement. The Mathematics Department will offer an Honors Program starting next year. It’s quite good news for those of you who would like a career in mathematics.

The requirements to apply to this program are, first, a minimum of nine credit courses taken over two or three semesters. Six of these courses must be taken in the senior year and devoted to work on the thesis. The remaining three courses must be completed by the end of the junior year. Those of you who are interested must hand in two letters of recommendation and proof of 15 hours of co-curricular activities in one semester. As for your grade point average - your GPA - at least a 3.3 is expected. Mind you, the deadline for the applications is the thirteenth of November, 2018. Late submissions will not be accepted.

Sample questions 3-4:

For items 3 and 4, you will listen to a professor’s announcement about a new program offered by the Mathematics Department. Choose the correct alternative.

The Honors Program - Requirements

3. ___ credit courses on the thesis
   a) 3         b) 6         c) 9

4. Apply latest on ____
   a) 13/11/2018
   b) 30/11/2018
   c) 13/10/2018

Answers:

3. b (second paragraph, lines 2 and 3)
4. a (second paragraph, last two lines)
Instructions

Sample script 4:

Hello folks. I’m professor Johnson’s assistant, and your lab instructor. Before we start our lab session, I’d like to give you some guidelines on how to keep your lab notebook. Every one of you should maintain a hardbound lab notebook. This notebook is going to be a permanent record of what you do and what you observe in the laboratory. Professor Johnson is strict about the lab notebooks, so if you fail to follow these guidelines, your grades may suffer.

OK. Number one. Start each new topic - these could be calculations, an experiment or notes - on an odd-numbered page, that is the right-side page.

Second, after each lab session, you must have your notebook signed by your lab instructor, me, before you leave the lab at the end of the session. I understand that you may be in a hurry at times, but you must have your notebook signed before you leave.

A final note: you must number every page, preferably in the top right corner. The top left corner would also work, but bottom corners are not suitable.

OK. There are also ethical standards you must follow. Most importantly, it is essential that you record all your data in your notebook. This includes data that are hard to interpret, contradictory to previous data, or just plain ugly. Even if your experiment fails completely, you need to record the negative data and describe what happened.

Alright. Second, your notebook should be accurate, but mistakes happen. When keeping your notebook, remember to correct your mistakes, but never remove them. To correct a mistake, cross it out with a single line and leave the original version legible. You may also have to tape a print out on your notebook. If you tape the wrong sheet, cross it out and tape the correct sheet without covering up anything already in your notebook. You also need to remember to sign and date all corrections.

Finally, as a means of assuring the integrity of your notebook, no pages should ever be removed for any reason.

Alright, now we can start finding our way in the lab. You see … (fade)
Sample questions 5-6:

For items 5 and 6, you’ll listen to a lab assistant giving information about keeping a lab notebook. Choose the correct alternative.

5. Which of the following would affect a student’s grade negatively?
   a) Numbering pages on the top-left corner
   b) Getting pages signed the following day
   c) Starting calculations on odd-numbered pages

6. Which of the following would be considered unethical?
   a) Correcting any mistake by crossing it out
   b) Recording data contradicting previous data
   c) Taping the correct sheet over the incorrect one

Answers:

5. a) The top corners are accepted. (X)
   b) Notebooks must be signed before leaving the lab. (√)
   c) New topics must start on an odd-numbered page. (X)

6. a) All mistakes should be corrected by crossing out with a single line. (X)
   b) All data must be recorded even if it contradicts the previous. (X)
   c) Printed sheets must be taped on a blank area, not on any previously recorded data. (√)
# Conversations

**Task**

Conversations is an audio recording. You will listen to a dialogue between two people and answer questions.

---

**Purpose**

To assess the test taker's ability to
- follow lines of argument
- understand why someone says something
- understand a speaker's attitude / point of view
- understand meaning that is not explicitly stated
- understand the main reasons for and against an idea
- understand advice and instructions
- understand problem/solution and cause/effect relationships
- recognize emphasis through intonation and stress
- distinguish between fact and opinion
- identify bias

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<table>
<thead>
<tr>
<th>Length of each episode</th>
<th>~3 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of episodes</td>
<td>2</td>
</tr>
<tr>
<td>Number of questions in each episode</td>
<td>2</td>
</tr>
<tr>
<td>Question type</td>
<td>Multiple choice with three options</td>
</tr>
<tr>
<td>Weighting</td>
<td>1 point for each correct response</td>
</tr>
</tbody>
</table>
Conversation

Sample script 5:

1  Jason: Hey Karen.
2  Karen: Hey Jason... You look upset. What happened?
3  Jason: Oh, Professor Higgs announced the grades yesterday.
4  Karen: And?
5  Jason: I got a C minus.
6  Karen: Um. Sorry to hear that. But C minus isn’t so bad, is it?
7  Jason: I guess. But you know I think I deserved a better grade. I studied really hard
8  and fulfilled every course requirement as he wanted. You know … I did all the weekly
9  readings and wrote my reflections. My mid-term grades were off-the-charts. I got
10  over 80 on both exams. We completed the final group project, and it was terrific.
11  We prepared this amazing report on the geological features of the Lycian canyon. I
12  even did the stupid bonus mini-project. It is completely unfair; you know...
13  Karen: Umm. What are you going to do about this?
14  Jason: I am planning to call him and make an appointment. Do you think that will
15  work?
16  Karen: Umm, but Professor Higgs prefers to receive queries via email. He made a
17  specific note about this on the course syllabus and it says “all questions and requests
18  via email!”
19  Jason: Email? What if I have questions that I cannot ask in an email?
20  Karen: Then, we need to go to his assistant’s office. But I think this can only be
21  solved by Professor Higgs himself.
22  Jason: Yeah. I guess you’re right.
23  Karen: I think you should stick to the suggestion given on the course syllabus.
24  Jason: Yeah that would be the best way.
Conversation

Sample questions 7-8:

7. Why does Jason mention the course requirements?
   a) To complain that he could barely fulfill them
   b) To show that his performance was very good
   c) To tell that the workload was doable

8. What advice does Karen give to Jason?
   a) To e-mail the professor
   b) To call the professor
   c) To go to his assistant’s office

Answers:

7. a) Starting from line 7, Jason states that he studied hard and managed to fulfill the course requirements. (X)
    b) Starting from line 9, Jason tells Karen how successful his studies were. (√)
    c) There is nothing in Jason’s speech that implies the work was either easy or difficult. (X)

8. a) In line 16, Karen mentions the professor’s note about contact preference on the syllabus, which is e-mail. In line 23, she recommends Jason to follow what is written in the course syllabus. (√)
    b) In line 16, Karen mentions the professor’s note about contact preference on the syllabus, which is e-mail. (X)
    c) Starting from line 20, Karen says that Jason’s problem can only be solved by the professor himself, which again takes us back to contact by e-mail. (X)
## Discussion

<table>
<thead>
<tr>
<th>Task</th>
<th>Discussion is an audio recording. You will listen to a discussion between four to five people and answer questions.</th>
</tr>
</thead>
</table>
| Purpose | To assess the test taker's ability to  
• follow topic development  
• understand why someone says something  
• understand a speaker's attitude / point of view  
• understand meaning that is not explicitly stated  
• understand main reasons for and against an idea  
• recognize emphasis through intonation and stress  
• infer attitude and mood by using contextual, grammatical and lexical cues  
• identify details that support a point of view  
• recognize the use of language that expresses doubt |
| Length of each episode | ~3 minutes |
| Number of episodes | 1 |
| Number of questions | 4 |
| Question type | Multiple matching – matching each speaker with an aspect mentioned during the discussion. |
| Weighting | 1 point for each correct response |
Discussion

Sample script 6:

Simon: Hello guys, as you know, we are going to work together in this assignment. The project is about the effects of suburban housing on transportation and commuting habits. We are assigned to do the research in Polatlı. So we will need to visit the district, talk to people and collect our data, there. Now, we should decide on who to talk to; that is, our participant group. I guess you had time to think about how to go about it. Let’s hear what you think. Eric?

Eric: I think we should first lay out a plan and design the project on paper. It will be much easier if each of us knows exactly how to proceed, and whom to talk to. I believe we should start with the local shops; I mean with people who own them or work there. In this way, we will get reliable information. They will know the transportation problems as they spend their daytime there.

Simon: I see. What do you think, Diane?

Diane: Well, I am not sure but I guess I agree with Eric that we need to collect reliable information. Where can we get reliable information? I can think of a number of places, such as the governor’s office or the municipality. Why don’t we start with people working there and then we can enlarge the participant group if we need more data.

Simon: That’s interesting. Let’ hear your ideas, Marc.

Marc: I agree with Eric that we should talk with working people. However, I suggest a different group: people who work in transportation. Those people who are actually driving the busses or minibuses to and from Polatlı will be a good source of information, I believe. However, we should choose participants from among people who drive the public vehicles. We cannot learn much from people who drive their own cars.

Simon: All right. Suzanne, you are the last. Tell us what you think.

Suzanne: This is really confusing. Initially I thought we could collect data from anyone travelling to the district on a regular basis. Now, I think people who run their own restaurant or a service centre could be good choices. Those people meet with hundreds of customers every day so they will have a good background on the housing and transportation problems.

Simon: All right. Thank you all. I see that you have different views. Perhaps we should also consider other variables before deciding on how to proceed.
Discussion

Sample questions 9-12:

For items 9-12, you will listen to a group of students discuss whom to choose as their participant group for a project. Match each name (9-12) with one participant group (a-e). Some options may be used more than once; some options may not be used at all.

<table>
<thead>
<tr>
<th>Students</th>
<th>Participant Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Eric:</td>
<td>_____</td>
</tr>
<tr>
<td>10. Diane:</td>
<td>_____</td>
</tr>
<tr>
<td>11. Marc:</td>
<td>_____</td>
</tr>
<tr>
<td>12. Suzanne:</td>
<td>_____</td>
</tr>
<tr>
<td></td>
<td>a. Civil servants</td>
</tr>
<tr>
<td></td>
<td>b. People in the private sector</td>
</tr>
<tr>
<td></td>
<td>c. Car owners</td>
</tr>
<tr>
<td></td>
<td>d. Public transport drivers</td>
</tr>
<tr>
<td></td>
<td>e. Customers of the local shops</td>
</tr>
</tbody>
</table>

Answers:

9. b (line 8-11)
10. a (lines 14-16)
11. d (lines 18-20)
12. b (lines 25-28)
<table>
<thead>
<tr>
<th>Lectures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Task</strong></td>
</tr>
</tbody>
</table>
| **Purpose** | To assess the test taker's ability to  
- follow topic development  
- understand why someone says something  
- understand a speaker's attitude / point of view  
- understand meaning that is not explicitly stated  
- understand main reasons for and against an idea  
- recognize emphasis through intonation and stress  
- recognize that a speaker is clarifying points, paraphrasing, summarizing or repeating ideas  
- recognize generalizations and their supporting ideas |
| **Length of each episode** | 4-5 minutes |
| **Number of episodes** | 4 |
| **Number of questions in each episode** | 4 |
| **Question type** | Multiple choice with three options |
| **Weighting** | 1 point for each correct response |
In 1845, Ireland's vast potato fields were struck by an invasive fungal disease that rapidly infested this staple crop. The effect was devastating. One million people died of famine, and over a million more were forced to leave Ireland. Nowadays, we avoid such agricultural catastrophes with the help of pesticides. These are a range of manmade chemicals that control insects, unwanted weeds, funguses, rodents, and bacteria that may threaten our food supply. They've become an essential part of our food system.

As populations have grown, monoculture, I mean, single crop farming, has helped us feed people very efficiently. But it has also left our food vulnerable to extensive attack by pests. In turn, we've become more dependent on pesticides. Today, we annually shower over 5 billion pounds of pesticides across the Earth to control these unwanted visitors. The battle against pests, especially insects, has marked agriculture's long history.

Records from thousands of years ago suggest that humans actively burned some of their crops after harvest to rid them of pests. There's even evidence from ancient times that we recruited other insects to help. In 300 A.D., Chinese farmers specially bred ferocious predatory ants in orange orchards to protect the trees from other bugs. Later, as large-scale farming spread, we began sprinkling arsenic, lead, and copper treatments on crops. But these were incredibly toxic to humans as well.

As our demand for more, safer produce increased, so did the need for effective chemicals that could control pests on a grander scale. This ushered in the era of chemical pesticides. In 1948, a Swiss chemist named Paul Hermann Müller was awarded a Nobel Prize for his discovery of dichlorodiphenyltrichloroethane, also known as DDT. This new molecule had unparalleled power to control many insect species until the 1950s, when insects became resistant to it. Worse, the chemical actually drove dramatic declines in bird populations, poisoned water sources, and was eventually found to cause long-term health problems in humans.

By 1972, DDT had been banned in the United States, and yet traces still linger in the environment today. Since then, chemists have been searching for alternatives. With each new wave of inventions, they've encountered the same obstacle - rapid species evolution.

As pesticides destroy the pest populations, they leave behind only the most resistant individuals. These then pass on their pesticide-resisting genes to the next generation. That's led to the rise of super bugs, such as the Colorado potato beetle, which is resistant to over 50 different insecticides. Another downside is that other bugs get caught in the crossfire. Some of these are helpful predators of plant pests or vital pollinators, so erasing them from agriculture wipes out their benefits, too.
Lecture

Sample questions 13-16:

13. What led to the loss of the main food source in Ireland in 1845?  
   a) A harsh winter  
   b) A disease  
   c) An increase in pest population

14. Which of the methods was used in the battle against pests after large scale farming began?  
   a) Breeding predatory ants  
   b) Burning wide areas of croplands  
   c) Sprinkling arsenic on crops

15. What was Paul Müller awarded the Nobel Prize for?  
   a) His classification of harmful insect species  
   b) His description of rapid species evolution  
   c) His discovery of a very effective pesticide

16. Why does the speaker mention the Colorado Potato Beetle?  
   a) To exemplify a species unaffected by a wide range of insecticides  
   b) To explain how a certain species population decreased over time  
   c) To name one of the 50 different superbugs

Answers:  
13. b (lines 1-2)  
14. c (lines 15-16)  
15. c (lines 20-21)  
16. a (lines 32-33)
This page is intentionally left blank.
LISTENING PRACTICE

Brief Talks
For items 1-3, you will listen to three one-minute talks and a question related to each. As you listen, mark the alternative that answers the question or completes the statement. Before you listen to each talk, you will be given 15 seconds to look at the three alternatives.

1. What is the main point of the talk?
   a) English will continue to be a global language.
   b) We cannot know definitely which language we will speak in the future.
   c) Fluency in Latin used to be a common standard long ago but not now.

2. What is the purpose of the talk?
   a) To compare graphene with other materials
   b) To give instructions on how to make graphene
   c) To explain the general features of graphene

3. What is the main point of the talk?
   a) Chimpanzees are not social learners.
   b) Chimpanzees imitate others’ behaviors.
   c) Chimpanzees cannot use advanced instruments.

Announcement
For items 4-5, you will listen to an announcement on the dates and times for picking up graduation caps and gowns. As you listen, mark the alternatives that answer the questions or complete the statements. Before you listen to the announcement, you will be given 30 seconds to look at the questions and the alternatives.

4. Until when can the students pick up a cap and gown the latest?
   a) 20th May
   b) 23rd May
   c) 23rd June

5. Which is a suitable time for students on duty to obtain their outfits?
   a) 09.30 a.m.
   b) 10.30 a.m.
   c) 11.30 a.m.
Instructions

For items 6-7, you will listen to an instruction on scheduling a lab. As you listen, mark the alternatives that answer the questions or complete the statements. Before you listen to the instructions, you will be given 30 seconds to look at the questions and the alternatives.

6. To whom should assistants go to get the most accurate information about the availability of labs?
   a) The Registrar's Office
   b) Departmental schedulers
   c) The Social Sciences Center

7. What should the assistants do to make any changes in the lab schedule?
   a) Notify the lab consultants before the class
   b) See the departmental schedulers face to face
   c) Send an e-mail to the Social Sciences Center

Conversation

For items 8-11, you will listen to a conversation between two students. As you listen, mark the alternatives that answer the questions or complete the statements. Before you listen to the conversation, you will be given 60 seconds to look at the questions and the alternatives.

8. How are Tom and Janet going to reserve a time slot at the lab?
   a) By using the department website
   b) By talking to the lab assistants face to face
   c) By filling in the time table at the lab door

9. How do they decide to manage the background reading materials?
   a) They share the workload equally.
   b) Tom reads one book; Janet reads the rest.
   c) Each one reads all materials.

10. Why does Janet mention Kimberly?
    a) To emphasize that they should not copy and paste from original texts
    b) To criticize Kimberly for not properly paraphrasing the texts
    c) To remind Tom that anyone may fail the course whatever they do

11. What is Tom's attitude towards the project?
    a) Cautious
    b) Sarcastic
    c) Unenthusiastic
Discussion

For items 12-15, you will listen to a group discussion among students. As you listen, match each students’ name with a suggested topic. Some options may be used more than once; some options may not be used at all. Before you listen to the discussion, you will be given 30 seconds to read the question and the alternatives.

<table>
<thead>
<tr>
<th>Students</th>
<th>Suggested Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Mary-Jane</td>
<td>a. The utilization of robotic technology in farms</td>
</tr>
<tr>
<td>13. Ethan</td>
<td>b. Monitoring water sources from space</td>
</tr>
<tr>
<td>14. Allison</td>
<td>c. Increasing production of popular crops</td>
</tr>
<tr>
<td>15. Riley</td>
<td>d. The expansion of crop production in uncultivated areas</td>
</tr>
<tr>
<td></td>
<td>e. The examination of crops through satellites</td>
</tr>
</tbody>
</table>

Lecture

For items 16 – 21, you will listen to a lecture about living on Mars. As you listen, mark the alternatives that answer the questions or complete the statements. Before you listen to the lecture, you will be given 60 seconds to look at the questions and the alternatives.

16. The speaker mentions a talk he gave 12 years ago to draw attention to _____.
   a) the vastness of our own galaxy
   b) all the great accomplishments of humans
   c) the possibility of the world’s ending all at once

17. The speaker’s reference to human DNA is to _____.
   a) justify why man wants to explore Mars
   b) emphasize that man can adapt to living on Mars
   c) bring to mind the evolution of early humans

18. The speaker discusses the need for the alignment of Earth and Mars to explain that we should _____.
   a) minimize the amount of fuel needed to make the trip to Mars
   b) provide a good timing for a possible manned flight to Mars
   c) build a rocket powerful enough to cover the distance between them
19. When the speaker says “... our track record of getting to Mars is lousy,” he means that _____.
   a) not many rockets have been sent to Mars yet
   b) few missions to Mars have proved successful
   c) Mars missions do not have a long history

20. The speaker’s own projection is that humans will get to Mars by _____.
   a) 2035
   b) 2040
   c) 2027

21. The speaker justifies Elon Musk’s claim by _____.
   a) illustrating his previous projections that proved correct
   b) drawing on his work in the automobile and rocket industries
   c) referring to his strong determination
**Listening Practice Answers**

1. B

2. C

3. A

4. C

5. B

6. C

7. B

8. B

9. C

10. A

11. C

12. D

13. E

14. A

15. E

16. C

17. A

18. B

19. B

20. C

21. B
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READING

The reading section of the examination tests your ability to understand written communication that is commonly encountered in academic contexts.

In this section of the examination you are expected to demonstrate your ability to

- read with a large degree of independence, adapting style and speed of reading to different texts and purposes, and using appropriate reference sources selectively,
- scan quickly through long and complex texts, locating relevant details,
- quickly identify the content and relevance of articles and reports on a wide range of professional topics, deciding whether a close study is worthwhile,
- understand articles and reports concerned with contemporary problems in which the writers adopt particular stances or viewpoints,
- understand a good range of vocabulary.

<table>
<thead>
<tr>
<th>Summary of the reading section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading passages</td>
</tr>
<tr>
<td>Purposes of Reading</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Number of questions</td>
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<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td>Total points</td>
</tr>
</tbody>
</table>
### Careful Reading

<table>
<thead>
<tr>
<th>Task</th>
<th>There are reading texts taken from journals, books, articles, magazines and newspapers usually dealing with an academic/semi-academic topic, written for non-specialist audience. You will read the texts and answer 5-7 questions in each text.</th>
</tr>
</thead>
</table>
| Reading skills & strategies | ■ Understanding main / specific ideas in a text  
■ Understanding text organization  
■ Recognizing significant points and arguments  
■ Understanding problem and solution relationships  
■ Understanding cause and effect relationships  
■ Understanding differences and similarities between different points of view  
■ Recognizing emphasis  
■ Understanding writer’s reasons for saying something  
■ Recognizing repetition, paraphrasing and parallelism between ideas  
■ Understanding inferred meaning  
■ Recognizing writer’s point of view  
■ Guessing word meaning from context |
| Length of texts | 600 - 900 words |
| Number of texts | 5 – 7 |
| Number of questions in each text | 5 – 7 |
| Total number of questions | 32 |
| Question types | ■ Main/Specific idea questions  
■ Text organization questions  
■ Text function questions  
■ Critical reading questions  
■ Vocabulary questions |
| Question formats | ■ Multiple Choice  
■ Matching  
■ Multiple Matching  
■ Text Insertion |
| Weighting | ■ 0.75 points for each correct response |
Main Idea / Specific Idea

Sample text 1:

Science has learned a good deal in recent years about the habits and requirements of introverts. It has even learned, by means of brain scans, that introverts process information differently from other people. If you are behind the curve on this important matter, be reassured that you are not alone. Introverts may be common, but they are also among the most misunderstood and aggrieved groups possibly all around the world...I know. My name is Jonathan, and I am an introvert.

Sample question 1:

Choose the statement that best summarizes the paragraph.

a) Their brain scans show us that introverts handle information in a manner peculiar to themselves.

b) Although there are plenty of scientific data about introverts, the misconceptions about them make them suffer.

c) Being an introvert is so common that introverts do not need to feel alone and should be able to fit into their social environments.

Answer:

a) The idea given in this option is correct, but it is not the summary of the paragraph. The following lines in the paragraph provide more crucial information. (X)

b) This option provides the most important information in a brief manner. (√)

c) That introverts are common is mentioned in the text, but the second part of the sentence is not correct according to the paragraph. (X)
Mass migration has produced a giant worldwide economy all its own, which has accelerated so fast during the past few years that the figures have astounded the experts. This year, remittances — the cash that migrants send home — through banks is set to exceed $232 billion, nearly 60% higher than the number just four years ago. Of that, about $166.9 billion goes to poor countries. In many of those countries, the money from migrants has now overshadowed exports, and exceeds direct foreign aid from other governments since there are many people sending 40% of their income in remittances. Indeed, many experts believe that the true figure for remittances this year is probably closer to $350 billion, since migrants are estimated to send one-third of their money using unofficial methods, including taking it home by hand. That money is never reported to tax officials, and appears on no records.

Sample question 2:

Choose the most suitable heading for the paragraph.

a) The negative effects of remittances on the receiving countries
b) Reason for the difficulty to estimate the true figures of remittances
   (✓)
c) Ways of making the most of remittances for receiving countries

Answer:

a) There is no mention of any effect of the money sent home. (X)
b) Whole paragraph is about the amount of money sent home, and the last two sentences make it clear why it is difficult to estimate the correct amount of remittances. (✓)
c) Making the most of remittances refers to how that money is spent in receiving countries. There is no mention of that in the text. (X)
Main Idea / Specific Idea

Sample text 3:

What is introversion? In its modern sense, the concept goes back to the 1920s and the psychologist Carl Jung. Today it is a mainstay of personality tests. Introverts are not necessarily shy. Shy people are anxious or frightened or self-criticizing in social settings; introverts generally are not. Rather, introverts are people who find other people tiring. Extroverts, on the other hand, are energized by people, and they often seem bored by themselves, in both senses of the expression. Leave an extrovert alone for two minutes and he will reach for his cell phone. In contrast, after an hour or two of being socially “on,” we introverts need to turn off and recharge. It isn’t a sign of depression. For introverts, to be left with our thoughts is as restorative as sleeping, as nourishing as eating. Our motto is “I'm okay, you're okay—in small doses.”

Sample question 3:

From the passage we understand that after socializing for some time, introverts ______.

a) feel depressed and need sleep
b) feel that they make people tired
c) want to remain by themselves

Answer:

a) Towards the end of the passage, the writer says “it isn’t a sign of depression”. (X)
b) On the fourth line, the writer says that introverts find other people tiring. (X)
c) Towards the end of the passage, the writer says that introverts need some time alone to refresh themselves. (√)
The Renaissance was an important time for artists. They developed new techniques and skills. Soon people began to admire their artistry as well as the subject of the artwork. A master artist could become a highly respected member of the community. He could dictate his own terms in his work and enjoy a much higher social status than a mere craftsman. And superstar artists like Michelangelo and Leonardo became famous throughout Europe, helping create the modern image of the artist as an independent creative genius.

Sample question 4:
Which of the below fits best into the blank in the paragraph?

a) Much of the art produced during the Renaissance was commissioned by wealthy families
b) It is still wondered whether the Renaissance was a cultural ‘advance’ from the Middle Ages
c) By the late Renaissance, artists were no longer thought of as tradesmen

Answer:
 a) The previous sentence is about the Renaissance artists (their artistry) and their artwork. In this option, the focus point is wealthy families; therefore, it does not fit the context. (X)
b) The content preceding and following the blank is definitely about artists and art; therefore, this option does not fit the context. (X)
c) Towards the end of the passage, the writer says that introverts need some time alone to refresh themselves. (√)
One challenge in developing drugs to fight brain tumors is that agents must be able to cross the blood-brain barrier, a filtering mechanism that only allows certain types of substances to enter the brain. \textcolor{red}{a}\textcolor{black}{\textcolor{red}{\textit{It is not yet clear whether coibamide A would be able to cross the blood-brain barrier, an aspect the team plans to investigate in the future.}}} \textcolor{red}{b}\textcolor{black}{\textcolor{red}{\textit{Marine bacteria have a potential to provide therapeutic leads with their unique chemical structures and biological activities, as illustrated by compounds such as coibamide A.}}} \textcolor{red}{c}\textcolor{black}{\textcolor{red}{\textit{Ishmael said even if coibamide A itself cannot enter the brain or turns out to have adverse side effects, knowing its structure and mechanism of action can help researchers develop new drugs that mimic coibamide A’s effects.}}}

**Sample question 5:**
Which underlined sentence does not fit in the paragraph?

a) \textcolor{red}{a}\textcolor{black}{\textit{(a)}

b) \textcolor{red}{b}\textcolor{black}{\textit{(b)}

c) \textcolor{red}{c}\textcolor{black}{\textit{(c)}}

**Answer:**

a) This sentence follows up on the previous one, explaining how the research team plans to proceed. (X)

b) Although the sentence includes a reference to Coibamide A at the end, the subject of the sentence is off-topic (marine bacteria). (√)

c) This sentence carried on the topic of crossing the blood-brain barrier and further explains how the researchers will proceed in case things go sideways. (X)
Could a slippery glob of algae hold the key to the next anti-cancer drug? According to new research into a compound produced by a unique community of blue-green algae, the answer could be yes. The compound in question is called coibamide A, discovered eight years ago by scuba-diving scientist Kerry McPhail of Oregon State University. A new study shows coibamide A has potent anti-cancer activity in mice and cell cultures that model brain tumors and a breast cancer subtype known as triple negative breast cancer. These are two of the most aggressive and difficult-to-treat types of cancer.

The chemical diversity found in nature has always been a significant source of motivation for drug design and development, but although the medicinal properties of plants have been recognized for thousands of years, marine environments remain relatively unexplored," said Jane Ishmael, Ph.D., associate professor of pharmacology at Oregon State University and the lead author of the new study. "We think that with this compound, nature has already found a way to target some of the specific proteins that are relevant to the growth of tumors."

Sample question 6:

How does the information in paragraph 2 relate to paragraph 1?

a) It refutes earlier ideas on coibamide A.
b) It gives the result of the discovery of coibamide A.
c) It offers further information on coibamide A.

Answer:

a) There is no negation in the text about coibamide A. (X)
b) There is no result mentioned in paragraph 2. (X)
c) There is information on how this compound helps prevent tumor growth in the last sentence of paragraph 2. (√)
Critical Reading Questions

Sample text 7:

Persuasion highlights the irrationality of human thinking. We may be living in a data-driven world, but that does not make people more logical. This is why the same people may regard an idea as absurd one day, and amazing the next. As Arthur Schopenhauer noted: “All truth passes through three stages. First, it is ridiculed. Second, it is violently opposed. Third, it is accepted as being self-evident.”

Sample question 7:

Which of the following does the writer support by referring to Arthur Schopenhauer in the passage?

a) Persuasion has become easier in the data-driven world we live in.
b) The inconsistency of human reasoning reveals itself in persuasion.
c) What underlies persuasion is the tendency to think logically.

Answer:

a) There is reference to the data-driven world only to explain that it doesn’t help to make people more rational. (X)
b) The stages given in Schopenhauer’s words reveal the inconsistency of human thinking. (✓)
c) Just the contrary, the author says persuasion is irrational. (X)
Critical Reading Questions

Sample text 8:

Dale Carnegie once noted that the only way to get someone to do something is to get that person to want to do something. Thus, all persuasion is ultimately self-persuasion. Even if I put a gun to your head, you are still free to decide what to do, albeit admittedly somewhat constrained. Scientific studies show that we are more likely to be persuaded when requests are consistent with our values, self-image, and future goals. In other words, people are easily persuaded of that which they wanted to do in the first place. As the French philosopher Blaise Pascal noted: “People are generally better persuaded by the reasons which they have themselves discovered than by those which have come into the mind of others.”

Sample question 8:

Which statement is true according to the passage?

a) Outside influences play the most significant role in persuasion.
   (X)

b) People are easier to persuade if the offer is in line with their ideas. (√)

c) It is risky to try to persuade people to do things they avoid doing.

Answer:

a) This option conflicts with the ideas given in the first two lines of the passage. (X)

b) The writer states in the second half of the passage that people have a tendency to accept an idea if it in line with their own values. (√)

c) The statement might be true but there is no information about it in the passage. (X)
Critical Reading Questions

Sample text 9:

Are introverts oppressed? I would have to say so. For one thing, extroverts are over-represented in politics, a profession in which only the garrulous are really comfortable. Look at George W. Bush. Look at Bill Clinton. They seem to come fully to life only around other people. With the possible exception of Ronald Reagan, whose fabled aloofness and privateness were probably signs of a deep introverted streak, introverts are not considered “naturals” in politics. Extroverts therefore dominate public life. This is a pity. If we introverts ran the world, it would no doubt be a calmer, saner, more peaceful sort of place. As one introvert is supposed to have said, "Don't you know that four fifths of all our troubles in this life would disappear if we would just sit down and keep still?" And, "If you don't say anything, you won't be called on to repeat it." The only thing a true introvert dislikes more than talking about himself is repeating himself.

With their endless appetite for talk and attention, extroverts also dominate social life, so they tend to set expectations. In our extrovertist society, being outgoing is considered normal and therefore desirable, a mark of happiness, confidence, leadership. Extroverts are seen as bighearted, warm and empathic. “People person” is a compliment whereas introverts are described with words like “guarded,” “loner,” “reserved,” “self-contained,” or “private”—narrow, ungenerous words, words that suggest emotional parsimony and smallness of personality. Female introverts, I suspect, must suffer especially. In certain circles, a man can still sometimes get away with being what they used to call a strong and silent type; introverted women, lacking that alternative, are even more likely than men to be perceived as timid, withdrawn, egotistical.

Sample question 9:

It can be inferred from the passages that introverts ________.

a) are more likely to be seen among females with an egotistical personality
b) may improve their social status despite others' opinions of them
 c) keep facing hardships due to the attitudes of the extroverts

Answer:

a) In the second half of the second paragraph, there is a reference to female introverts only to claim that female introverts suffer more than male introverts. (X)

b) On the contrary, the text says, for example in politics, extroverts are overrepresented (lines 1-2). (X)

c) In both paragraphs, there is reference to this idea but mostly in paragraph 1, lines 6-7, paragraph 2, lines 1-6. (√)
Critical Reading Questions

Sample text 10:

No creature has a reputation more fearsome than the great white shark. Despite all we have learned about them, including how they really do not have much interest at all in eating us, movies and documentaries still show them as “machines” that do little more than “swim, attack and eat.” And that’s not to mention the various video games where your goal as a great white is to bite everything in sight in as little time as possible.

But what do great white sharks really do all day? It is easy for the mythology of these predators to overshadow their real biology because it is difficult to spend an extended amount of time following and observing animals that live beneath the waves and can cross entire oceans. We mostly see these sharks when they’re near the surface, and, while ingenious, strategies like fitting cameras on the animals have literally been limited in scope and what can be recorded.

Thanks to some documentaries, Guadalupe Island off the coast of Mexico has become known as a great white shark hotspot. Yet, despite the abundance of sharks and observers – including cage divers – in the area, no one has seen how these sharks go about getting their meals. We have seen in these documentaries that the great white sharks of Guadalupe Island feed on the fur seals, elephant seals, and sea lions that loll about in the shallow waters there. Sharks have been seen feasting on the mammals at the surface. But we have never seen their initial strikes. Given the waters around Guadalupe Island rapidly drop off from the shoreline, researcher Gregory Skomal and his colleagues think that the sharks are attacking their prey at depth and follow the carcass up the water column as it bobs to the surface.

Sample question 10:

It can be inferred from the passages that our knowledge of the great white sharks’ behavior is limited because of ______.

a) the insufficient number of sharks to be observed
b) our inability to fit cameras onto them
c) the nature of their habitat

Answer:

a) From the third paragraph line 2, we understand that there are quite a number of sharks around Guadeloupe island. (X)
b) From the second paragraph, lines 5 and 6, we understand that it is possible to fit cameras onto the sharks, though limited in number. (X)
c) From the second paragraph, lines 2 and 3, and third paragraph, lines 6 and 7, we understand that it is hard to observe sharks when they are in deep sea. (V)
About SEARCH READING:

As the name “search reading” indicates, in this reading task, the test-taker is expected to “search” the answers in a lengthy reading text (with multiple paragraphs, subtitles, and sometimes visuals). In this part of the exam, the test takers are expected to answer open-ended questions by skimming, scanning and search reading the text. To answer the questions, full comprehension of the entire text is not necessary. On the contrary, the test takers will merely need to spot the related part of the text that has the answer. Below is a sample test and questions to help understand the nature of the task.
SLOW LIVING: SLOW FOOD AND SLOW CITIES

Introduction

Towards the end of 1980s, the Slow Food and Slow City movements appeared as alternative approaches to urban economic development. The agendas of both movements are to promote sustainability and conviviality. The Slow Food movement is focused on countering the loss of local distinctiveness as it relates to food, conviviality, sense of place, and hospitality. The Slow City, or Città Lente, movement—a spin off from the Slow Food movement—aims to protect and enhance urban liveability and quality of life. Slow Cities are places where citizens and local leaders pay attention to local past and utilize the distinct local context to develop in better and more sustainable ways. More generally, both movements focus on local distinctiveness and link what is briefly called the three E’s of sustainable urban development. These three refer to the environment, the economy, and equity in society and their goals represent ideas about how to grow cities in a more conscious and “slow” way and constitute, as we will argue in this article, an alternative, more inclusive, less corporate-centred urban regime.

The Slow Food movement was founded in 1986 by an Italian food writer who was alarmed by the opening of a McDonald’s restaurant next to the Piazza di Spagna in the heart of Rome. The movement’s goal is to protect the “right to taste” (Slow Food, 2004) by preserving almost-extinct traditional food products, raising the awareness of the pleasures of eating (including the social aspects of sharing a meal), taste education, and paying attention to traditional agricultural methods and techniques among other initiatives.

Environmental Aspect

The Slow Food movement touches on important aspects that keep local community economies vital. In particular, Slow Food is locally grounded through its goal of maintaining the viability of locally owned businesses such as restaurants and farms. At the core of the movement is the concept of “territory.” Slow Food emphasizes local distinctiveness through the connection to the specificity of a place as expressed by traditional foods and ways of producing and growing produce such as wine, cheese, fruits, and vegetables. In the words of Carlo Petrini, the Italian food critic who spearheaded the resistance against McDonalds, the concept of territory is a “combination of natural factors (soil, water, slope, height above sea level, vegetation, microclimate) and human ones (tradition and practice of cultivation) that gives a unique character to each small agricultural locality and the food grown, raised, made and cooked there.” Slow
Food’s understanding of territory connects the environmental aspects of a place to the culture and the history of people who inhabit the territory and have utilized it for generations for traditional food production. The Slow Food movement is organized locally into “convivia.” By mid-2005 there were 83,000 members that were organized into 800 convivia in 50 countries, including 140 local chapters in the United States, 53 in Germany, and 360 in Italy.

One example of the Slow Food program that highlights the importance of territory is the so-called “Salone del Gusto,” a biannual fair that showcases products made by local artisans. At the fair, consumers can taste and buy products of the locals. The fair is financially and politically supported by the Regional Authority of Piedmont in Italy. In 2004, the movement held its fourth fair in Turin and the next was scheduled for October 2006. The event highlights the diversity associated with different territories and aims at educating the public about the product’s taste and heritage. Its programs focus on creating an aware consumer. Such a consumer would in turn support local small farmers and local business owners. Through such local consumption practices, it is argued, local producers can have the opportunity to derive an income. Slow Food promotes environmentally sound production through organic farming and by raising awareness about the dangers of genetically modified products and their threats to biodiversity.

**Social & Economic Aspect**

Connecting the environment with social and economic aspects is the central idea of another Slow Food program, as well and it is called the Ark of Taste. This program aims to protect almost-extinct fruits, vegetables, and traditional products or dishes through cataloguing and promoting them. To be incorporated in the Ark’s catalogue, a product has to fulfil five requirements concerning the quality of the product. Ark products have to be connected to a specific territory (e.g., through the use of local ingredients and/or the use of traditional local practices). They also have to be linked environmentally, socio-economically, and historically to a specific locality, and must be made in limited quantities by small producers, as well as being at risk of real or potential extinction.

One example that highlights the intimate connection between the environment and the local economy is the case of wine production in the Italian region Cinque Terre. The region is known for its steep terraced hills along the Mediterranean coast of North-western Italy. Wine production on these steep hills became almost extinct and the cultural landscape was in danger. Slow food promoted the protection of the vineyards by emphasizing the quality of the locally produced wine, the so-called Sciacchetrà wine. Higher quality means higher prices for the wine, which in turn makes it worthwhile for young people in the villages to become vintners. This made it more appealing to younger generations to continue caring for the vineyards and thereby cultivating the landscape. They were in turn supported by training courses about how to increase the quality of their wine.
The Slow Food movement was formed out of a struggle against the proliferation of corporate centred dynamics—that is, the expansion of fast food restaurants—in countries such as Italy that have traditionally been more attached to the origins and the local embeddings of food.

We have outlined the major components of the Slow Food movement because it created important ideas and incited the creation of a progressive network of small towns—Slow Cities or Citt`a Lente—that set out to follow an alternative urban development agenda. The ideas of the Slow Food movement constitute the ideological basis for the Slow City movement, which we will describe in the next volume.
Sample questions 11-14:

*Fill in the blanks with information extracted from the text. **Keep your answer as short as possible.***

11. The Slow Food movement links the environment in a particular area to
____________________________________________________________________________________________

12. According to the program Salone del Gusto, consumers with an awareness will
____________________________________________________________________________________________

13. In the region Cinque Terre, the Slow Food movement helped to stress
____________________________________________________________________________________________

14. Other than the “Red House”, what adds to the preservation of social sustainability in Waldkirch is ____________________________________________________________

Answers:

11) the culture and the history of people
12) support local farmers and local business owners
13) the quality of the locally produced wine
14) (the tradition of) conducting the main farmers’ market on the prominent central square
This page is intentionally left blank.
“Fail at life. Go bomb yourself.” Comments like this one, found on a CNN article about how women perceive themselves, are prevalent today across the internet, whether it’s Facebook, Reddit, or a news website. Such behavior can range from profanity and name-calling to personal attacks, sexual harassment, or hate speech. A recent Pew Internet Survey found that four out of 10 people online have been harassed online, with far more having witnessed such behavior. Trolling has become so rampant that several websites have even resorted to completely removing comments.

Many believe that trolling is done by a small, vocal minority of sociopathic individuals. This belief has been reinforced not only in the media, but also in past research on trolling, which focused on interviewing these individuals. Some studies even showed that trolls have predisposing personal and biological traits, such as sadism and a propensity to seek excessive stimulation.

But what if all trolls aren’t born trolls? What if they are ordinary people like you and me? In our research, we found that people can be influenced to troll others under the right circumstances in an online community. By analyzing 16 million comments made on CNN.com and conducting an online controlled experiment, we identified two key factors that can lead ordinary people to troll.

We recruited 667 participants through an online crowdsourcing platform and asked them to first take a quiz, then read an article and engage in discussion. Every participant saw the same article, but some were given a discussion that had started with comments by trolls, whereas others saw neutral comments instead. Here, trolling was defined using standard community guidelines – for example, name-calling, profanity, racism, or harassment. The quiz given beforehand was also varied, to be either easy or difficult.

Our analysis of comments on CNN.com helped to verify and extend these experimental observations. The first factor that seems to influence trolling is a person’s mood. In our experiment, people put into negative moods were much more likely to start trolling. We also discovered that trolling ebbs and flows with the time of day and day of the week, in sync with natural human mood patterns. Trolling is most frequent late at night, and least frequent in the morning. Trolling also peaks on Monday, at the beginning of the workweek. Moreover, we discovered that a negative mood can persist beyond the events that brought about those feelings. Suppose that a person participates in a discussion where other people wrote troll comments. If that person goes on to participate in an unrelated discussion, he or she is more likely to troll in that discussion too.
The second factor is the context of a discussion. If a discussion begins with a “troll comment,” then it is twice as likely to be trolled by other participants later on, compared to a discussion that does not start with a troll comment. In fact, these troll comments can add up. The more troll comments in a discussion, the more likely that future participants will also troll the discussion. Altogether, these results show how the initial comments in a discussion set a strong, lasting precedent for later trolling.

We wondered if, by using these two factors, we could predict when trolling would occur. Using machine-learning algorithms, we were able to forecast about 80 percent of the time whether a person was going to troll or not. Interestingly, mood and discussion context were together a much stronger indicator of trolling than identifying specific individuals as trolls. In other words, trolling is caused more by the person’s environment than any inherent trait. Since trolling is situational, and ordinary people can be influenced to troll, such behavior can end up spreading from person to person. A single troll comment in a discussion – perhaps written by a person who woke up on the wrong side of the bed – can lead to worse moods among other participants, and even more troll comments elsewhere. As this negative behavior continues to propagate, trolling can end up becoming the norm in communities if left unchecked.

Despite these sobering results, there are several ways this research can help us create better online spaces for public discussion. By understanding what leads to trolling, we can now better predict when trolling is likely to happen. This can let us identify potentially provocative discussions ahead of time and preemptively alert moderators, who can then intervene in these aggressive situations.

Social interventions can reduce trolling. a) If we allow people to remove recently posted comments, then we may be able to minimize regret from posting in the heat of the moment. Altering the context of a discussion, by prioritizing constructive comments, can increase the perception of civility. b) Nonetheless, there is lots more work to be done to address trolling. c) It is also important to differentiate the impact of a troll comment from the author’s intent: Did the troll mean to hurt others, or was he or she just trying to express a different viewpoint? This can help separate undesirable individuals from those who just need help communicating their ideas.

When online discussions break down, it is not just sociopaths who are to blame. We are also at fault. Many “trolls” are just people like ourselves who are having a bad day. Understanding that we are responsible for both the inspiring and depressing conversations we have online is key to having more productive online discussions.
1. How does the information in paragraph B relate to paragraph C?
   a) Paragraph B defines trolls, and paragraph C provides evidence that is found through text analysis on CNN.com.
   b) Paragraph B presents how trolls are generally characterized, and paragraph C opposes that view.
   c) Paragraph B presents research evidence on individual troll characteristics, and paragraph C supports it by presenting experiment results.

2. According to the author, which factors are believed to affect trolling behavior?
   a) Time and day, and the number of participants in a discussion
   b) People’s feelings and familiarity with others they communicate with
   c) People’s state of mind and interaction behavior

3. Which of the following cannot be concluded from paragraph G?
   a) Online discussion boards need to be moderated.
   b) Specific conditions accelerate trolling behavior.
   c) Computed algorithms reveal best who will troll.

4. Choose the best summary for paragraph H.
   a) This research is useful in revealing the reasons for trolling and preparing to take action before trolling happens.
   b) The results of the research are disheartening; however, through open discussions, we may be able to prevent trolling in online spaces such as discussion boards.
   c) The research reveals that we should be more careful in online platforms and help moderators isolate those people who troll.

5. Where in paragraph I does the following sentence belong?
   Even just pinning a post about a community’s rules to the top of discussion pages helps, as a recent experiment conducted on Reddit showed.
   a) a
   b) b
   c) c

6. What is the best title for this text?
   a) Trolls redefined
   b) Trolling on the rise
   c) A troll by nature
In the 1950s, the Finnish biologist Björn Kurtén noticed something unusual in the fossilized horses he was studying. When he compared the shapes of the bones of species separated by only a few generations, he could detect lots of small but significant changes. Horse species separated by millions of years, however, showed far fewer differences in their bone structure. Subsequent studies over the next half century found similar effects—organisms appeared to evolve more quickly when biologists tracked them over shorter timescales. Then, in the mid-2000s, Simon Ho, an evolutionary biologist at the University of Sydney, encountered a similar phenomenon in the genomes he was analyzing. When he calculated how quickly DNA mutations accumulated in birds over just a few thousand years, Ho found the genomes full of small mutations. This indicated a rapidly ticking evolutionary clock. But when he zoomed out and compared DNA sequences separated by millions of years, he found something very different. The evolutionary clock had slowed to a crawl.

Baffled by his results, Ho set to work trying to figure out what was going on. He stumbled upon Kurtén’s 1959 work and realized that the differences in rates of physical change Kurtén saw also appeared in genetic sequences. His instincts as an evolutionary biologist told him that the mutation rates he was seeing in the short term were the correct ones. The genomes varied at only a few locations, and each change was as obvious as a splash of paint on a white wall. But if more splashes of paint appear on a wall, they will gradually conceal some of the original color beneath new layers. Similarly, evolution and natural selection write over the initial mutations that appear over short timescales. Over millions of years, an A in the DNA may become a T, but in the intervening time it may be a C or a G for a while. Ho believes that this mutational saturation is a major cause of what he calls the time-dependent rate phenomenon.

“Think of it like the stock market,” he said. “Look at the hourly or daily fluctuations of Standard & Poor’s 500 index, and it will appear wildly unstable, swinging this way and that. Zoom out, however, and the market appears much more stable as the daily shifts start to average out. In the same way, the forces of natural selection weed out the less advantageous and more deleterious mutations over time.”

Ho’s discovery of the time-dependent rate phenomenon in the genome had major implications for biologists. It meant that many of the dates they used as bookmarks when reading life’s saga—everything from the first split between eukaryotes and prokaryotes billions of years ago to the re-emergence of the Ebola virus in 2014—could be wrong. “When this work came out, everyone went ‘Oh. Oh, dear,’” said Rob Lanfear, an evolutionary biologist at the Australian National University in Canberra.
The time-dependent rate phenomenon wasn't fully appreciated at first. For one thing, it is such a large and consequential concept that biologists needed time to wrap their heads around it. But there's a bigger block: The concept has been all but impossible to use. Biologists have not been able to quantify exactly how much they should change their estimates of when things happened over the course of evolutionary history. Without a concrete way to calculate the shifts in evolutionary rates over time, scientists couldn't compare dates.

Recently, Aris Katzourakis, a paleovirologist at the University of Oxford, has taken the time-dependent rate phenomenon and applied it to the evolution of viruses. In doing so, he has not only pushed back the origin of certain classes of retroviruses to around half a billion years ago—long before the first animals moved from the seas to terra firma—he has also developed a mathematical model that can be used to account for the time-dependent rate phenomenon, providing biologists with much more accurate dates for evolutionary events.

Other scientists are excited by the prospect. "It's like Einstein's theory of relativity, but for viruses," said Sebastián Duchêne, a computational evolutionary biologist at the University of Melbourne. The time-dependent rate phenomenon says that the speed of an organism's evolution will depend on the time frame over which the observer is looking at it. And as with relativity, researchers can now calculate by how much.
7. **What is the function of paragraph A?**
   a) It explains unexpected findings regarding the development of a rare animal species.
   b) It introduces similar research findings by two biologists from different countries.
   c) It shows how the understanding of evolutionary process varied in two decades.

8. **Why does the writer use the phrase “a splash of paint on a white wall” in paragraph B?**
   a) To help the reader recognize the significance of short-term mutation rates
   b) To help the reader see the similarity between mutation and natural selection
   c) To help the reader understand the causes of different mutation rates

9. **According to paragraph E, what is true about biologists’ reactions to the time-dependent rate phenomenon?**
   a) They did not think it was such a significant find.
   b) They tried to challenge the idea with further research.
   c) They felt they needed a method to put it into practice.

10. **Which of the following could be the best title for this text?**
    a) Evolution and time: New evolutionary evidence creates a conflict
    b) DNA mutations may have been overrated, new research finds
    c) Evolution is slower than it looks, faster than you think
Match statements (11-13) with a scientist (a-e). There are more names than you need.

11. He introduced a new concept that greatly altered the existing literature of evolution. _____
   a. Aris Katzourakis
   b. Björn Kurtén
   c. Rob Lanfear
   d. Sebastián Duchêne
   e. Simon Ho

12. His work enabled the putting of time-dependent rate phenomenon to practical use. _____
   a. Aris Katzourakis
   b. Björn Kurtén
   c. Rob Lanfear
   d. Sebastián Duchêne
   e. Simon Ho

13. His work focused on the physical make-up of fossils belonging to an animal species. _____
   a. Aris Katzourakis
   b. Björn Kurtén
   c. Rob Lanfear
   d. Sebastián Duchêne
   e. Simon Ho
Search Reading

SVALBARD SEED VAULT

I. Introduction

Mission

Though the general public is well aware of the threat of extinction to animal species, far fewer are aware of the risk of crop extinction. With whales or tigers or polar bears, you can look at them in the eye and you can be very empathetic. But you can't do that with a wheat variety or carrot variety. Preserving seed from food plants is an absolutely essential part of the work of preserving the world’s biodiversity, adapting to climate change and global warming, with an eventual goal to ensure food for the world’s population. The foundation of a global central seed bank for the world’s seeds (primarily of food plants) has therefore long been an issue, and Svalbard Global Seed Vault was a step in this direction.

Funding and Construction of the Vault

The history of Svalbard seed vault starts as early as 1983. Like other big projects, it's been a long and not very easy journey. In 1989, the International Board for Plant Genetic Resources (IBPGR) started surveying the relevant alternative sites in Svalbard. Norway offered to take care of the actual construction of the vault, while the Food and Agriculture Organization (FAO) and IBPGR would take care of the administrative operational expenses through the creation of a fund based on capital from external donors.

II. Description of the facility

Location

This Seed Vault lies about 1 kilometer from Longyearbyen Airport, at about 130 meters above sea level and consists entirely of an underground facility, blasted out of the permafrost (at about minus 3-4 degrees Celsius). The facility is designed to have an almost “endless” lifetime. The location takes into account all known scenarios for rising sea level caused by global climate changes. The facility has also been located so deep inside the mountain that any possible changes to Svalbard’s climate, which we know about today, will not affect the efficacy of the permafrost.

Inside the Facility

The facility consists of three separate underground chambers. The layout of these chambers is purposeful. None of them are in a direct line. Instead, the workers have carved out a concave indentation in the rock. This serves as a security measure against an explosion. The chambers, each of which with a capacity to store 1.5 million different seed samples, have storage shelving for pre-packed examples of food seeds from the depositors.
A tunnel, which is about 100 meters long, is used to access the chambers. It has an entrance portal which is the only visible part of the facility. It is in the form of a long, narrow concrete “fin”, with an entrance of brushed steel. An artistic decoration on the outer roof surface and on the upper part of the front partly reflects the polar light and partly gives off a muted, glowing light. The outer half of the entrance tunnel is constructed as a steel pipe with a diameter of about 5 meters. This passes through the layer of snow and ice and the loose rocks, into solid mountain. The innermost part and the storage chambers were blasted out of the mountain using tunnel drilling and rock blasting techniques. The mountain is secured with bolts and spray concrete. The permafrost also contributes to stability. The interior floor is of asphalt. There is electric lighting throughout and the facility is secured against forced entry and has TV surveillance. Areas for filing and other administrative work of a temporary nature are located beside the entrance tunnel. The total floor area of the facility is just less than 1,000 square meters.

III. Administration

Early Conflicts

In the early 90s, there was heated debate between the various member countries of the FAO about patenting and access to genetic resources. Developing countries wished to receive part of the proceeds from the commercial seed industry, since the diversity mainly came from their areas, whilst the commercial seed industry wanted free access to such resources and the opportunity to patent the seeds. This led to a polarized atmosphere with little mutual trust regarding the administration of seed. The lack of international agreement to regulate this area eventually became an obstacle to realizing the plans for an international safety deposit for seeds in Svalbard, and the construction of the vault had to be delayed.

Who Owns the World’s Heritage?

The turning point came when FAO’s International Treaty for Plant Genetic Resources for Food and Agriculture came into force in 2004. This created a new basis for taking the plans up again. The Norwegian Ministry of Foreign Affairs and the Ministry of Agriculture and Food took up the challenge. A group of Nordic and international experts under the direction of Noragruc at the Norwegian University of Life Scientists (UMB) were appointed to carry out a preliminary study. In September 2004, the group put forward an unambiguously positive report, which concluded that suitable locations were to be found in Svalbard. The report recommended that a chamber should be built inside the mountain.

In November 2004, the report was presented at FAO’s Commission for Genetic Resources for Food and Agriculture. The Norwegian idea received a positive response and was perceived by many countries as a most welcome contribution to the international work of
preserving the world’s plant genetic resources. Some developing countries also pointed to the earlier positive experience of development collaborations with Nordic countries and the Nordic Genetic Resource Centre in Svalbard. Following the FAO meeting Norway began work on financing the construction project. Since the purpose of the seed vault was multilateral, it was natural to pave the way for making this a joint initiative between three ministries, the Ministries of Foreign Affairs, Environment and Agriculture and Food. The government backed the initiative and in 2005 an interdepartmental steering group was set up for the project. Under the chairmanship of the Ministry of Agriculture and Food, the steering group discussed various alternatives for the location, organization, agreement format and operation of the seed vault, as well as working in close cooperation with international experts in relevant fields. It was also stressed that the storage of seeds should be done in accordance with international gene bank standards, at minus 18 degrees, and that the seeds should be stored by the black box method, which means that only the institution which deposits seeds has right of ownership and disposition over them. That is, even though the facility is owned by Norway, it is important to underline that the seed samples which are stored in the vault are indisputably the property of the depositor.

IV. Why Svalbard?

1) Svalbard, as Norwegian territory, enjoys security and political and social stability. Norway understands the importance of preserving Svalbard as an area of undisturbed nature, which is now an important research and reference area. The seed vault fits ideally into this concept.

2) Svalbard has an isolated position far out in the ocean, between 74° and 81° N and only 1000 kilometers from the North Pole. This archipelago has an undisturbed nature. Permafrost, which is characteristic of this area, provides stable storage conditions for seeds, even when there is a power cut or a technical problem with cooling systems.

3) The seed vault, which consists of three chambers, is located right outside Longyearbyen and directly opposite Longyear Airport. The facility is about 130 meters above sea level and has been tunnelled 120 meters into the mountain, in a stable sandstone situation. Each of the three underground chambers is about 1,200 cubic meters (20 meters deep, 10 meters wide and 6 meters high). The location so far below ground guarantees stable permafrost for the foreseeable future and is high enough above sea level to secure the facility against any rise in sea level as a result of global warming.

4) The facility’s open location near the town makes monitoring and security easier. Security is the responsibility of the Governor of Svalbard in cooperation with the University of Svalbard (UNIS).
International Significance

The international seed vault is a unique contribution to the preservation of the planet’s most important biodiversity. This has been a priority issue for Norway for many years as well as the principal objective of the Biodiversity Convention and the FAO treaty. The seed vault could come to have a special significance for a number of regions in developing countries where the storage conditions in regular gene banks are a constant challenge. For many years it has been Norway's aim to play a bridge-building role in the north-south debate about genetic resources and biological diversity. Svalbard Global Seed Vault can be a unifying initiative, which offers much to countries both north and south and which will hopefully also promote global collaboration in taking care of our most important genetic resources. Securing food supplies is one of the most basic issues in any strategy for eliminating poverty. In a time of climate change, this is an equally global issue. The establishment of a global seed vault is therefore very much in line with the principle of informed self-interest.

V. Seed Storage

The Svalbard Global Seed Vault provides facilities free of cost for safety deposits under “black box conditions” on request from public or private holders of seeds of distinct genetic resources that are important to humanity. Priority is given to the safety deposit of plant genetic resources of importance for food security and sustainable agriculture.

Costs pertaining to the packaging and shipping of the deposited seeds are borne by the depositors. However, in the case of developing countries and international gene banks, the Global Crop Diversity Trust is funding the costs of preparing, packing and shipping their seeds to Svalbard.

The Seed Vault does not have the opportunity to test the viability of the seeds, but accepts new shipments of seeds when the duplicate samples at the depositor's possession have lost fertility. Import and storage of GMO (Genetically-modified) seeds according to Norwegian legislation require advance approval. Certain other criteria apply to "sealed internal use" for research purposes and indoor storage of GMO, for example with regard to the risk of spreading GMO. Norwegian gene technology legislation was formulated before the Svalbard Global Seed Vault (SGSV) was set up, and therefore fails to take into account the vault's special status, or the low risk related to handling seeds in sealed packaging. Until changes can be made to the rules, long-term storage of GMO seeds in the SGSV will not be approved.

VI. Conclusion

Svalbard Global Seed Vault is not a gene bank, it is a facility for maintaining crop diversity in the form of seeds, stored and conserved in a frozen state. The ideal temperature is between minus 10 and minus 20 degrees Celsius. Gene banks may also contain living plants and parts of plants in those cases where it is difficult to store the crop in the form
of seeds. The Seeds in the Seed Vault shall only be accessed when the original seed collections have been lost for any reason.

The Seed Vault has the capacity to store 4.5 million different seed samples. Each sample contains on average 500 seeds, so a maximum of 2.25 billion seeds may be stored in the Seed Vault. The Seed Vault, therefore, has the capacity to hold all the unique seed samples that are conserved today by all the gene banks in more than 100 countries all over the world. In addition, the Seed Vault has the capacity to also store many new seed samples that may be collected in the future. When in full use, the Svalbard Global Seed Vault will represent the world’s largest collection of seeds. Priority is given to crops that are important for food production and sustainable agriculture, which is of utmost importance for developing countries where food security is a challenge.

Different crop varieties have different characteristics and not all the differences may be visible to the eye. Genetic traits may provide differences in disease resistance, adaptability to various soils and climates, different tastes and nutritional qualities. If we ever need to use the potentially unique and sometimes hidden traits found in a particular crop variety, then we must ensure that the variety is available. Unfortunately, much diversity has already been lost. The number of plant varieties used during the last 30 years of intensification of agriculture has been dramatically reduced. If we do not take action immediately, different varieties of wheat and potato can disappear as permanently as dinosaurs.
Search Reading Questions

Complete the statements below using information from the text. Keep your answers as short as possible.

Sample item:

0. The ultimate purpose of founding a global central seed bank is **to ensure food for the world’s population**.

14. The FAO and IBPGR agreed to cover the operation costs of the vault with the money collected from ________________________________.

15. The specific layout of the chambers functions as ________________________________.

16. In the 1990s, there was no consensus among nations on seed administration. This led to the postponement of ________________________________.

17. According to the black box method, the seed samples stored in the vault belong to ________________________________.

18. The advantage of Svalbard’s location in providing an appropriate setting for seed storage is ________________________________.

19. ________________________________ is the main aim of the Biodiversity Convention and the FAO treaty.

20. According to the laws in Norway, it will not be possible to import and store GMO seeds in Svalbard without ________________________________.

21. ________________________________ will benefit most from the Vault’s preference for specific seed samples because their food production in the long-term is at risk.
## Reading Practice Answers:

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<table>
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<td>14</td>
<td>(a fund based on capital from ) external donors</td>
</tr>
<tr>
<td>15</td>
<td>a security measure against an explosion</td>
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<tr>
<td>16</td>
<td>the construction of the vault</td>
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<tr>
<td>17</td>
<td>the institution which deposits seeds / the depositor</td>
</tr>
<tr>
<td>18</td>
<td>permafrost (which is characteristic of this area)</td>
</tr>
<tr>
<td>19</td>
<td>The preservation of the planet’s most important biodiversity</td>
</tr>
<tr>
<td>20</td>
<td>advance approval</td>
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<tr>
<td>21</td>
<td>Developing countries</td>
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</tbody>
</table>
VOCABULARY

In this section, test takers’ vocabulary knowledge is assessed. The objective of this section of the test is to assess the test takers’ ability to recognize words that are commonly used in entry-level academic texts.

VOCABULARY PRACTICE

1. Earth-sized planets announced by research teams in the past __________ disappeared when other teams looked at that data and couldn’t independently discover them.
   a) critically   b) subsequently   C) deliberately   d) respectively   e) broadly

2. A team of researchers are working on developing micro mote computers that can __________ sensor capabilities and limit power usage in devices such as smartphones.
   a) eliminate   b) grasp   C) execute   d) precede   e) enhance

3. Changing your passwords frequently is one of the simplest things you can do to protect yourself from digital _______.
   a) emission   b) justification   c) differentiation   d) invasion   e) integration

4. Human activities ________ fossil fuels for many beneficial purposes but have an undesirable side effect of adding carbon dioxide to the atmosphere at ever-increasing rates.
   a) stabilize   b) sustain   c) utilize   d) dissolve   e) retrieve

5. For over a century, social research has had two wings. Some researchers adopt a more detached, scientific and academic orientation while others are more activist, ________ and reform oriented.
   a) pragmatic   b) affirmative   c) fortunate   d) biased   e) territorial
6. Membrane proteins are difficult to study. Removing them from their normal environment _______ them of the company of other substances essential for their function.

a) assures  b) notifies  c) suspects  d) deprives  e) convinces

7. The industrialization of the past two centuries produced enormous benefits; however, it also left us with a ________ of unintended and negative consequences.

a) diagnosis  b) hardship  c) legacy  d) reflection  e) consensus

8. Most people with tattoos do not think of them as accounts of cultural alienation, nor are tattoos a statement of __________, at least among most adults. In fact, many tattooed persons view tattoos, and other forms of body art, and as an attractive method of body adornment.

a) proposition  b) rebellion  c) specification  d) participation  e) proximity

9. Over the years, many legal reforms to integrate women’s human rights fully into domestic law have occurred. However, progress remains insufficient because discrimination against women is __________ in both public and private spheres.

a) irrelevant  b) prevalent  c) proportional  d) inconsistent  e) distinctive

10. Environmental management is becoming increasingly important to everyone, whether at work, in the community or at home – from __________ with environmental legislation to addressing the global challenges of climate change and energy conservation.

a) dispensing  b) coinciding  c) interacting  d) complying  e) encountering
Vocabulary Practice Answers

1. B
2. E
3. D
4. C
5. A
6. D
7. C
8. B
9. B
10. D
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WRITING TASK

In this section, test takers’ ability to explain the information given in a visual, i.e. a table, chart or graph, is tested. The expected length of the writing is about 150 words.

The objectives of this section are to assess test-taker’s ability to

- understand information given in a table, chart or graph
- use appropriate language structures to define, explain, compare, or contrast information
- logically organize information
- paraphrase and summarize
- use an expanded range of vocabulary that relates to a variety of topic areas
- follow the conventions of spelling, punctuation and capitalization
Expected response format and features

<table>
<thead>
<tr>
<th>Introduction</th>
<th>(Paraphrases the caption and properly mentions all components of the visual.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body (Overview)</td>
<td>(Explains the trends / processes / categories in the visual and illustrates them -provides numerical data- sufficiently.)</td>
</tr>
<tr>
<td>Conclusion</td>
<td>(A summary statement emphasizing the major trend / process / category)</td>
</tr>
</tbody>
</table>

Information on grading

The weighting of the task is 10 points. There are five scoring bands:

<table>
<thead>
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<th>Excellent</th>
<th>(9-10)</th>
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<tr>
<td>Average</td>
<td>(5-6)</td>
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<tr>
<td>Below Average</td>
<td>(3-4)</td>
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<tr>
<td>Poor</td>
<td>(1-2)</td>
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<tr>
<td>Void paper or fewer than 30 words</td>
<td>(0)</td>
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</tbody>
</table>

In the **Excellent** band, the following features are sought:

- The title is paraphrased and mentions all the components of the visual.
- In the body paragraph, all key features are summarized and important numerical data is given.
- There is a summary statement which emphasizes the major trends/features without repeating what is given in the body paragraph.
- Trends/processes/categories in the visual are presented in a
  - logical manner (e.g. from the highest to the lowest)
  - grouped where possible (i.e. not listed in a linear manner).
- The sentences are connected to each other to create a fluent text.
- The sentence structures are appropriate to the type of the visual, varied in range and accurate.
- There is a wide range of vocabulary correctly used and appropriate to the type of the visual.
The reader is able to envisage (the important aspects of) the visual through your text.

The task requires strict adherence to the information given in the visual. If the writing includes your own ideas and/or comments 1 point will be deducted from the writing grade. If a writing is significantly longer than expected (+25%), 1 point will be deducted from the writing grade.
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Describe the following table by reporting the trends and making comparisons, in about 150 words. Make sure you present the information in an organized manner using a variety of language structures and vocabulary.

You are advised to spend 5 minutes planning and 25 minutes writing.

<table>
<thead>
<tr>
<th></th>
<th>Car</th>
<th>Bus</th>
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</tr>
<tr>
<td><strong>Change</strong></td>
<td>596%</td>
<td>361%</td>
<td>343%</td>
<td>733%</td>
<td>538%</td>
<td>329%</td>
</tr>
</tbody>
</table>

You can use this space for planning.
Sample response to Table

The table illustrates the number of road motor vehicles in Turkey in the years 1980 and 2000, in thousands, and change ratio for each type of vehicle.

Cars made up the largest group of vehicles in Turkey both in 1980 and 2000 (742 thousand and about 4.4 million, respectively) revealing an increase by 596%. Tractors and trucks were about the same in number both in 1980 (350 thousand) and in 2000 (1.2 million). The number of motorcycles was small in 1980 but it went up to 1 million in 2000, increasing by 733%. Buses, which were 98 thousand in 1980 increased by 361% in 2000. Finally, work machinery made up the smallest group of vehicles with only 24 thousand in 1980 and 129 thousand in 2000, with an increase of 538%.

Overall, motorcycles showed the greatest, and tractors the smallest increase ratio among all the vehicles from 1980 to 2000.

(150 words)

Feedback to the response:

+ paraphrases the title of the table
+ does not skip any important information
+ adapts an approach to present data (from the highest to the lowest)
+ groups data logically (tractors and trucks)
+ mentions numbers correctly (adding thousands to the numbers on the table)
+ makes comparisons where possible
+ gives an overall view at the end from a different perspective
+ does not include any personal views / comments
+ is within the word limit

Grading

This paper receives a grade in the Excellent band (9 – 10)
Line Graph

Describe the following graph by reporting the trends and making comparisons, in about 150 words. Make sure you present the information in an organized manner using a variety of language structures and vocabulary.

You are advised to spend 5 minutes planning and 25 minutes writing.

You can use this space for planning
Sample response to Line Graph

This line graph shows the changes in the prices of houses and flats in Denmark between the years 2006 and 2017 in Danish Crones.

In 2006, both houses and flats sold at over 90 thousand DKK. In one year, the prices increased to about 105 thousand DKK for a house and 97 thousand DKK for a flat. Between 2007 and 2009, house prices stayed stable and then decreased suddenly to about 88 thousand DKK. Between 2009 and 2013, house prices were stable but flat prices showed overall increase to reach 82 thousand DKK. From 2013 onwards, both flat and house prices showed a gradual and stable increase. In 2014, flat prices became higher than house prices. In 2017, a flat was sold at about 115 thousand DKK and a house was sold about 100 thousand DKK.

Overall, from 2016 to 2017, the price of flats increased more than the price of houses.

Feedback to the response:

+ introduces the visual properly
+ adapts an approach to present data (chronological)
+ mentions most major trends
+ gives an overall view at the end without repeating the information in the body paragraph
+ does not include any personal views / comments

Needs improvement

- fails to mention the multiplier for Danish Crones (thousands)
- there is some incorrect/missing information
  Flat prices increased from 2012 onwards.
  Flat prices became higher than house prices after 2014.
  There is no information on flat prices between 2007 – 2009 (major trend)
- there are language mistakes that do not affect reader comprehension (preposition, passive, sentence structure, word choice)

Grading

This paper receives a grade in the Average band (5 - 6).
Bar Graph

Describe the following graph by reporting the trends and making comparisons, in about 150 words. Make sure you present the information in an organized manner using a variety of language structures and vocabulary.

You are advised to spend 5 minutes planning and 25 minutes writing.

You can use this space for planning.
Sample response to Bar Graph

The graph shows the sources of electricity and their shares in percentages in Turkey:

In 1980, hydro generated much more electricity (about 50%) than coal and liquid fuels. The total percentage of electricity produced from coal, liquid fuels and wastes was around 50 (25%, 24% and 1%, respectively).

In 1990 coal and hydro were two major sources (about 40%), followed by natural gas with 18% and liquid fuels with 7%. Waste was not used for electricity production that year. Finally, in 2000, the major source of electricity production was natural gas. This was followed by coal and hydro. The use of liquid gas did not change and remained at around 10%.

Similarly to 1990, waste was not used for electricity production either.

Overall, coal and hydro were major sources of electricity generation in those three decades and natural gas was on the increase. (143 words)

Feedback to the response:

+ attempts to paraphrase the title of the graph
+ adapts an approach to present data (chronological)
+ groups data logically (coal, liquid fuels and wastes)
+ mentions numbers correctly
+ makes comparisons where possible
+ gives an overall view at the end from a different perspective
+ does not include any personal views / comments

Needs improvement

- fails to mention the dates in the introduction
- fails to mention the percentage of natural gas used in 2000 (a key feature) as well as the other energy sources
- contains a few language mistakes that do not affect reader comprehension
- contains a few punctuation mistakes

Grading

This paper receives a grade in the Good band (7 - 8).
Pie Chart

Describe the following charts by reporting the trends and making comparisons, in about 150 words. Make sure you present the information in an organized manner using a variety of language structures and vocabulary.

You are advised to spend 5 minutes planning and 25 minutes writing.

**Average Yearly Expenditure of Households in Europe**

![Pie Chart]

You can use this space for planning
Sample response to Pie Chart

The pie charts compare, in percentages, the distribution of the average household expenditures in Europe, in 2010 and 2015.

In 2010, the major expense item in households was housing costs (51%) followed by food, which comprised 23% of the total expenditure. Transport was the third area of expenditure which was 14%. Clothing, health and communication were the smaller areas of expenditure (7%, 3% and 2%, respectively).

In comparison to 2010, in 2015, the percentage of housing expense did not change much (50%). However, there were some small changes in the spending on other areas. People spent less on food in 2015 (21%) but more on transport (16%). Clothing expenses were very similar to 2010; there was only a 1% decrease. However, communication expenses more than doubled, and reached 5%. The smallest percentage of expenditure was health, with 2%.

Overall, annual distribution of expense categories of European households did not change much in the years 2010 and 2015.

(158 words)

Feedback to the response:
+ paraphrases the title of the table
+ adapts an approach to present data (year by year)
+ groups data logically (items with similar percentages given together)
+ makes comparisons where possible
+ gives an overall view at the end without repeating the information from the body paragraph
+ does not include any personal views / comments
+ uses synonyms to avoid repetition

Grading

This paper receives a grade in the Excellent band (9 - 10).
PERFORMANCE TASK

The performance task assesses test-takers’ ability to write a formal text—a summary essay—collating information from two sources: a listening and a reading text. The expected length of writing is 250 - 300 words.

The objectives of this section are to assess test-taker’s ability to

- take notes on a lecture
- summarize information from a lecture
- reformulate an idea in different words to emphasize or explain a point
- compare information from different sources
- signal that two ideas are similar /contrast ideas by using discourse markers
- attribute information to different sources

Preparing for the task

The performance task aims at measuring your listening & note-taking skills in addition to your reading comprehension and writing skills. This task comprises two sections: the initial listening & note-taking and the essay writing (in which you are supposed to utilize your notes from the listening as well as a given reading text).

To practice for this section of EPE, you need to practice note-taking; especially for main points and complementary details. However, your notes alone won’t be enough to produce the desired writing because you will be asked to integrate/ incorporate the important points from a reading text. Therefore, summarizing and paraphrasing are also important skills to complete this task successfully.
**Expected response format and features**

<table>
<thead>
<tr>
<th>Introduction</th>
<th>(Introduces the topic and sources used in the summary.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body (Summary)</strong></td>
<td>(Summarizes key information from the lecture and incorporates relevant information from the reading text.)</td>
</tr>
<tr>
<td><strong>Conclusion (Optional)</strong></td>
<td>(A recap of the viewpoints of both sources)</td>
</tr>
</tbody>
</table>

**Information on grading**

The weighting of the task is 20 points. There are six scoring bands:

- **A – Perfect response to the task** (18-20)
- **B – Good response to the task** (15-17)
- **C – Partial response to the task** (12-14)
- **D – Limited response to the task** (9-11)
- **E – Poor response to the task** (6-8)
- **F – Very Poor response to the task** (3-5)
- **Z – Void or No Task Fulfillment** (0-2)

In the **Perfect** band, the following features are sought:

- The topic and the sources (the lecture and the reading text) are introduced.
- All key information from the lecture is presented clearly and precisely.
- All relevant information from the reading text is incorporated into the corresponding sections of your summary.
- A variety of language structures is used accurately. Some minor mistakes are acceptable.
- A wide range of vocabulary is used correctly.
- The information used from the reading text is paraphrased rather than copied.

The task requires strict adherence to the information given in the sources. If the writing includes your own ideas and/or comments, you will lose points.

If a writing is significantly longer than expected (+25%), 1 point will be deducted from the performance grade.
PERFORMANCE TASK PRACTICE

Note-taking
You will hear a lecture on biomimicry. While listening, take notes on the main points and important details. You will hear the lecture only once.
Brewery uses biogas as fuel

Animal waste is processed to produce biogas

The eco-friendly system of beer production at Storm Brewing Corporation, Canada

Brewery produces beer and waste (spent grains)

Spent grains are used to feed animals

A traditional brewery of today that brews beer according to industry standards produces beer but also produces organic waste. This waste generally ends up in landfills. However, a brewery in Canada has been turning this linear process into an eco-friendly closed-loop system.

The Shinkansen Train, Japan

The Japanese Shinkansen train is part of a railway system that transports 40% of all railway passengers in the world. The plans for this bullet train started in 1969 to make it possible to travel from Osaka to Hakata in about 2 hours and 20 minutes through tunnels. But there was a problem: when a train rushes into a narrow tunnel at high speed, this generates atmospheric pressure waves that gradually grow into waves like tidal waves. These reach the tunnel exit at the speed of sound, generating low-frequency waves that produce a large boom and aerodynamic vibration so intense that residents 400 meters away started complaining.

Eiji Nakatsu, an engineer and a birdwatcher, used his knowledge of the splashless water-entry of kingfishers to decrease the sound caused by Japan’s bullet train. Kingfishers move quickly from air, a low-resistance medium, to water, a high-resistance medium. The kingfisher’s beak provides an almost ideal shape for such an impact. The beak steadily increases in diameter from its tip to its head. This reduces the impact as the kingfisher essentially makes its way into the water, allowing the water to flow past the beak rather than being pushed in front of it. Because the train faced the same challenge, moving from low resistance open air to high resistance air in the tunnel, Nakatsu designed the forefront of the Shinkansen train based on the beak of the kingfisher.

Bates Hotel, Scotland

Situated in Cairngorms National Park in Scotland, the Bates Hotel is a famous destination for tourists with its nature-friendly aspects. After the owners of the hotel worked with energy experts, annual savings worth £48,500 have been identified across a number of key areas — heating, insulation, solar panels, lighting, and water use. Using the sun to provide the hotel’s heating and hot water, for example, reduced the annual heating costs by more than half compared to other heating systems.
Summary Essay

Summarize all the main points in the lecture and integrate the relevant points from the reading text. Write 250-300 words.

Do not copy sentences from the reading text. Use your own words.

Total time: 50 minutes
The lecture defines the principles of biomimicry, and the reading text gives examples of it.

The first principle mentioned by the lecturer is imitation of biological models. It means imitating a biological form for a purpose; for instance, gliding birds inspired the first flying machines. According to the reading text, Nakatasu used his knowledge about kingfishers to decrease the large boom and aerodynamic vibration of the Shinkansen Train by designing the forefront of the train based on the kingfisher’s beak.

The second principle is resource efficiency, which means using the resources smartly. The speaker mentions the Eden project, in which pressurized membranes found in nature were used as a clue to solve the problem of construction limits to glass sizes and helped make savings. In the reading text, the Bates Hotel is given as an example. The owners of this hotel used natural energy sources on key areas like heating and insulation, and thus saved nearly £50,000 annually.

Turning linear systems into closed-loop systems is the third principle mentioned in the lecture. In linear systems things are used and thrown away; however, in closed-loop systems, nothing ends up as garbage. The speaker talks about the caviar project, in which cardboard collected from restaurants are made into horse beds, recollected and used in worm composting. These worms are fed to fish which produce caviar, which was then sold to restaurants. The reading text gives a similar example: Storm Brewing Corporation collects spent grains to feed animals. The animal waste is processed into biogas, which is used as fuel in beer production.

The last biomimicry principle mentioned by the speaker is integration with the environment. Accordingly, people and nature are part of a system and they have to change the way they perceive the world by becoming ecologically literate. They should stop seeing what can be extracted from nature and concentrate on fitting in on earth.

(314 words)
Feedback to the response:

- introduces the topic and function of the listening text (defines biomimicry) and the reading text (gives examples)
- mentions all four principles of biomimicry making reference to the lecture/speaker
- incorporates all relevant information from the reading text making appropriate references
- does not copy from the reading text
- does not include any personal views / comments
- uses a variety of sentence structures and vocabulary

Grading

This paper receives a grade in the Perfect band (18-20).
Biomimicry is imitation of the nature to solve complex human problems. Since the nature has already solved those problems, we imitate it. Biomimicry has four basic principles:

The first principle is imitating biological models. To solve problems, technology has copied nature in different areas, such as imitating birds and bats to create flying machines, like Da Vinci did. However, it doesn't mean simply copying. It should be for a function, to solve problems. For instance, the Japanese Shinkansen Train used to make too much noise when a train rushes into a narrow tunnel at high speed, which caused complaining from near residents. An engineer and bird watcher Nakatsu, solved this problem using this principle and his knowledge about birds. He realized that kingfishers move quickly from air, a low resistance medium, without any problems. Thus, he used the shape of the kingfisher’s beak while designing the fore front of the train.

The second principle is increasing resource efficiency. That is, using natural resources to save energy. The Bates Hotel in Scotland managed to save a lot of energy just by working with energy experts and using nature. For instance, just with the solar energy, they reduced annual heating costs, and they saved nearly €48,500.

The third principle is changing a linear system to closed-loop system. We extract the resources until they turn into garbage and then we get rid of them. According to the closed-loop system nothing turns into garbage. The eco-friendly system of beer production at Storm Brewing is very good example of this system. As traditional brewery produces organic waste, they decided to use new eco-friendly system. They use spent grains to feed animals, animals produce biogas, which is used as fuel in brewery.

The last principle is integration with the environment. We should focus how can we fit in to environment, instead now can we extract. It is necessary to change our view about nature.

To conclude, those 4 principles of biomimicry have very useful benefits like saving energy, reducing garbage and solving our problems. It is necessary to use them to save our planet.

(348 words)
Feedback to response 2:

- introduces the topic but fails to mention the sources
- mentions all four principles and integrates information from the reading text but it is unclear for an outside reader to understand the sources of information
- too much information taken from the reading text
- contains minor language and vocabulary errors
- the range of grammar and vocabulary is limited

Grading

This paper receives a grade in the B band (Good response to the task) (15-17).
Both reading and the lecture showed how important biomimicry is and will be. Through the lecture we understood what biomimicry is and we were given some example of its applications with reading part.

Biomimicry is basically solving human’s problems with modelling nature’s elements and systems. Moreover, we take advantage of nature and implement its way of operating to our daily lifes and jobs. Biomimicry has four basic prinicibles. First one is that it tries to imitate nature according to the speaker. For example, a problem with a train was solved when we based its modal to a bird and first glider was based on gliding bird. However, this doesn't mean we can build a building shaped as dog and call it biomimicry. In order to call it biomimicry, product has to have some critical function. In other words, it has to solve a problem Being efficient is the second prinicible. Nature use this in order to survive and, thus, we can take advantage of this as well. As the reading part shows us, a company uses sun as energy source and, thus, they cut their heating cost by half. Lso, they don’t waste additional resources, ultimately saving worlds resources. Third prinicible is converting our systems from a lineer path to closed loops. This means, for example, operating a factory within it self. Good example was that using cardboard to create a closed loop. They helped both humans and nature. Also, they earned money doing so. Last prinicible is that we should look at the earth as if we are part of it not its owner and consider how we can achieve sustainability. After all, if earth goes down, it will take us with it.

In conclusion, with biomimicry we can solve most if not all of our problems according to speaker. Eventhough examples clearly show why he is right, we have a long way to go.

(312 words)
Feedback to response 3:

- introduces the topic and mentions both sources (though language is not fluent & accurate)
- mentions all four principles but the third principle is not given adequately
- reference to the reading text is missing (first principle: mentions the train but fails to mention the source, which gives the reader the wrong impression about the source of the information)
- one example from the reading text is missing (third principle)
- some parts of the text are not well-connected
- contains vague expressions
- organization of the text is not clear (two “introductions”)  
- contains language and vocabulary errors
- contains spelling and punctuation errors
- includes test-taker’s own comment in the conclusion

Grading

This paper receives a grade in the D band (Limited response to the task) (9-11).
Biomimicry is an initiation of moduls, system and nature. The lecture emphasize that it has 4 crucial principles.

The first principle is that biomimicry requires to imitate biological moduls. By observing creatures or other natural buildings, it can be coin an idea about what you are going to do. To illustrate, in the past, planes or some car models were made by modelling some different species such as bugs, which are flying. Moreover, it doesn’t really copy just the same thing, by monitoring the shapes of creatures or understanding of their mechanism, it can be of helpful for biomimicry. The second principle, which is given in the lecture, is resourficency. If resources are used smartly and properly, we will have generate energies that we want without damaging to environment. Moreover, we should study nature to get the best result from resourficency. To illustrate, exploring ETF is a good example of it.

The third principle is an eco-friendly closed-loop system. This system, there will not be landfills anymore. Resources were extracted at first, then used for the purposes; after this, there would be garbages in the past. However, the advent of closed-loop system, we wont encounter such kind of result. There is a recycle in this system. The waste will turn into useable things. To illustrate, in Canada, there is a eco-friendly of beer production at Storm Brewing Corporation. Brewery produces beer and waste. This waste are used to feed animals. Animal waste is proceed to produce biogas, then, this biogas is used as fuel. The final principle is the integration of environment. Nature should be studied and understood to provide to solve our problems. This way, it can be benefitted from nature.

In conclusion, looking at afore-mentioned four principles about biomimicry, I think it will become more pervasive in the future.

(300 words)
Feedback to response 4:

- introduces the topic but mentions only one source (the lecture)
- mentions all four principles but the key points are not well-developed
- only one of the points from the reading text is mentioned (out of three)
- no reference is made to the lecture or the reading text in the body paragraphs
- contains frequent language and vocabulary errors
- contains frequent spelling, and punctuation errors
- includes test-taker’s own comment in the conclusion

Grading

This paper receives a grade in the E band (Poor response to the task) (6-8).
LISTENING PRACTICE TAPE SCRIPTS

Brief Talks Scripts

Brief Talk 1

Who would have predicted a thousand years ago that Latin would no longer be used in a thousand years' time? By hardly anybody you know. I mean obviously Latin is still used in certain circumstances but it would not be the normal education to be fluent in Latin. If you’d said that a thousand years ago people would have said you are mad. So in a thousand years' time, will English still be a global language? We could all be speaking Martian by then if they land and take over. You know who knows what's going to happen? To ask about the future of language is to really ask about the future of society and futurologists are just as unclear about what will happen eventually as I am about language.

Brief Talk 2

Graphene is the strongest material in the world. It is a better conductor of electrical current than silicon, and its thermal conductivity is better than copper. Graphene is transparent because it's just one atom thick. It absorbs a little light, but basically you can look through it. It's also extremely flexible. That means you can bend it like rubber, but if you try to pull it, it's like a diamond. So it's very hard. Graphene could be used to make much faster and more powerful computer chips. A layer of graphene can transmit 10 times as much data as regular silicon. So, graphene chips could send huge volumes of data around the globe at blinding speed. Graphene is also very easy to make, at least in small amounts. Just pull off a thin layer of graphite with sticky tape and repeat the procedure again and again until you're left with a layer just one atom thick.

Brief Talk 3

Now these chimpanzees are using tools, and we take that as a sign of their intelligence. But if they really were intelligent, why would they use a stick to extract termites from the ground rather than a shovel? And if they really were intelligent, why would they crack open nuts with a rock? Why wouldn't they just go to a shop and buy a bag of nuts that somebody else had already cracked open for them? Why not? I mean, that's what we do. Now the reason the chimpanzees don't do that is that they lack what psychologists and anthropologists call social learning. They seem to lack the ability to learn from others by copying or imitating or simply watching. As a result, they can't improve on others' ideas or learn from others' mistakes -- benefit from others' wisdom. And so they just do the same thing over and over and over again.
Announcement Script

Good morning everyone, now just get settled down please. Before we begin today’s lesson, I’d like to make an announcement from the Registrar’s Office regarding the graduation caps and gowns. Now, as you all know, the graduation ceremony will take place on the 25th of June and you need to have picked up your caps and gowns by the 23rd of June at the latest, that is two days before the ceremony. As you know, the graduation ball will be held on the 23rd of May. Don’t forget to get your invitations from the Registrar’s Office till the 20th of May.

Caps and gowns will be available at the bookstore and for your convenience, the bookstore will be open from 9.30 a.m. to 4.30 p.m every day, excluding lunchtime. However, some of you will be on duty at the rehearsals and also at the ceremony and will not be able to get their outfits on any of the designated dates. For those students only, the bookstore will be open the day before the ceremony but only from 10 a.m. to 11 a.m. O.K? Are there any questions before we start the lesson?
**Instructions Script**

O.K. everyone, now you've all been chosen to assist social sciences course instructors and you will be responsible for all issues regarding the labs. Now that the term has started, I'd just like to go over a few things about lab reservations.

If your instructor requests a lab for courses on a weekly basis, you have to first contact the departmental schedulers in advance. You may contact them in person or via e-mail. Then you need to check whether any of the labs are available. It is the Social Sciences Center who will give you the most precise information about the availability of labs. Finally, you must notify the Lab Coordinator at the Registrar's Office to schedule a weekly time.

It is your duty to follow your instructor's course schedule and make any other reservations such as workshops or training activities. But make sure you reserve the labs well in advance in order ensure appropriate scheduling.

If your instructor asks for any changes or cancellations in their schedule, it is again your responsibility to follow the same steps. However, you must inform the departmental schedulers of any changes or cancellations regarding the labs, at least two days in advance, and only in person, not by mail. Till last year, the assistants made the rescheduling through the Social Sciences Center but this year the system has changed.

And don't forget, there will be lab consultants available. They can help you on issues with the lab procedures and how to use the equipment before the class session begins.
Conversation Script

Janet: Hey Tom. Good morning.
Tom: Good morning Janet.
Janet: Well, I wanted to talk to you about the project assignment. Do you have time?
Tom: Sure.
Janet: You see; I don’t have a partner for the project. Do you want to work with me?
Tom: Yeah, why not.
Janet: Let’s grab a cup of coffee and discuss what to do. Shall we?
Tom: Ok.
Janet: Ok. Let’s look at the syllabus and check everything one by one. Now first, it says work in pairs.
Tom: Check!
Janet: This is going to be a lab experiment and a report on it. So, we need to reserve the lab. We should go to the lab at once, actually, to find a slot to reserve for our experiment. The schedules fill in quite quickly.
Tom: How do we do that?
Janet: We write our names on the timetable at the door.
Tom: Why don’t we do this online?
Janet: We can try... Let’s check the department website. ... Let’s see... There it is: Tuesday morning is free from 10 am to 12 am. What do you think?
Tom: Ummm. I have a class then. How about Thursday morning?
Janet: I am not free on Thursday: lots of classes.
Tom: I see. Well, Friday? In the afternoon? I have time, then.
Janet: Perfect! I am free Friday afternoon. ... Oh no! The lab is full Friday afternoon. It’s too late today but tomorrow let’s find the lab assistants in their office and arrange a time with them. There may be free time after work hours.
Tom: Alright.
Janet: The other thing we need to settle is background reading. There are lots of articles and books to read. The professor has already given the reading list. Do you have it with you?
Tom: I think so ....There it is. So many books! One, two, three, four.
Janet: Yeah, but we don’t need to read each cover to cover.
Tom: Oh yeah?
Janet: It would be enough to just check the content page and read the parts related to our experiment.
Tom: Ok then, I already have this first book in my library. I can go over it and you can read the rest. Is that too much reading for you?
Janet: It is indeed. But that’s not the point: the point is we both need to learn about the experiment before we go to the lab and do it. How on earth are we going to know what to do if we both don’t read the materials?
Tom: Well, ok. When do you think we should finish reading?
Janet: Shall we say next week?
Tom: I'll do my best.
Janet: Don't forget to take notes while reading. So we can use them when we write the report later.
Tom: Oh, we can copy and paste bits and pieces from the texts.
Janet: No, Tom. We cannot do that. Remember what happened to Kimberly last year. She was the only person who failed the course because she used some text from the book without quoting and got an F. I wouldn't want that. We need to write everything in our own words.
Tom: But then, it is going to take ages to finish it!
Janet: Well, maybe. And about the report: We need to write a three-page report on the experiment and a reflection paper.
Tom: And how long does this reflection have to be?
Janet: It says one-page essay here in the syllabus.
Tom: Alright. If we have to ...
Janet: OK then. Maybe we should stop by and inform the professor that we'll be working together.
Tom: What? Today? Why don't we do it some other time?
Janet: Why not? The sooner the better.
Tom: Ok, well. Do you mind going on your own?
Janet: Really? Tom we are supposed to cooperate!
**Discussion script**

**Riley:** Hey guys, I am glad we got together to discuss the human and natural science project. First of all, we need to find a focus. Remember, the professor asked us to relate our study to new developments in agriculture. Who’s got an idea? Mary-Jane why don’t you go first?

**Mary-Jane:** Sure. I did some research before coming here. I found something interesting in a natural science magazine. I read that multinational companies are looking to expand the production of in-demand commodity crops such as soy and oil palm in unexplored lands. We could study the possible effects of this enterprise on the vegetation and forests in related areas.

**Riley:** That's an interesting idea. Let’s hear what others think about it. Ethan?

**Ethan:** Yeah. It is a new subject, it’s controversial. But, it might be really difficult to obtain solid information on it, figures and all, you know. This is ongoing work. Perhaps we should focus on another area where we can find enough resources to develop a thesis.

**Riley:** What do you suggest, Ethan?

**Ethan:** There is a study by a Stanford team: they have used satellites to measure a special light emitted by plants to estimate crop yields. It helps scientists study how crops respond to climate change. I think this is quite relevant to the assignment and, what's more, it is a current subject. Do you remember, the professor mentioned how water resources are being monitored from space. The study that I mentioned applied this to agricultural areas.

**Riley:** Ok. What do you think Allison?

**Allison:** I agree with Ethan, let's focus on the use of technology. Satellite use is one aspect. Another could be something more down-to-earth: how about studying an automated farm? There are farms where robots in the air, like drones, collect information on the crops and robots on the ground help with harvesting crops, identifying weeds and so on. That looks like the future of farming.

**Riley:** Alright. Here's my suggestion. I love your ideas. It would be interesting to study the international policies on expanding agricultural fields and its possible outcomes. If I have to choose, though, I find the technological viewpoint more motivating. I guess I’d rather study how space technology is being used to improve crop yields. The future is in space, you know. Shall we vote now?
Lecture Script

Strap yourselves in, we're going to Mars.

Not just a few astronauts -- thousands of people are going to colonize Mars. And I am telling you that they're going to do this soon. Some of you will end up working on projects on Mars, and I guarantee that some of your children will end up living there.

That probably sounds preposterous, so I'm going to share with you how and when that will happen. But first I want to discuss the obvious question: Why the heck should we do this?

12 years ago, I gave a talk on 10 ways the world could end suddenly. We are incredibly vulnerable to the whims of our own galaxy. A single, large asteroid could take us out forever. To survive we have to reach beyond the home planet. Think what a tragedy it would be if all that humans have accomplished were suddenly obliterated.

And there's another reason we should go: exploration is in our DNA. Two million years ago humans evolved in Africa and then slowly but surely spread out across the entire planet by reaching into the wilderness that was beyond their horizons. This stuff is inside us. And they prospered doing that. Some of the greatest advances in civilization and technology came because we explored.

So let me tell you about the extraordinary adventure we're about to undertake. But first, a few fascinating facts about where we're going. The atmosphere on Mars is really thin - 100 times thinner than on Earth -- and it's not breathable, it's 96 percent carbon dioxide. It's really cold there. The average temperature is minus 81 degrees, although there is quite a range of temperature. Now, as you can see, Mars isn't exactly Earth-like, but it's by far the most livable other place in our entire solar system.

Here's the problem. Mars is a long way away, a thousand times farther away from us than our own moon. The Moon is 250,000 miles away and it took Apollo astronauts three days to get there. Mars is 250 million miles away and it will take us eight months to get there - 240 days. And that's only if we launch on a very specific day, at a very specific time, once every two years, when Mars and the Earth are aligned just so, so the distance that the rocket would have to travel will be the shortest. 240 days is a long time to spend trapped with your colleagues in a tin can.

And meanwhile, our track record of getting to Mars is lousy. We and the Russians, the Europeans, the Japanese, the Chinese and the Indians, have actually sent 44 rockets there, and the vast majority of them have either missed or crashed. Only about a third of the missions to Mars have been successful. So getting to Mars is not going to be easy and that brings up a really interesting question ... how soon will the first humans actually land here?
Now, some pundits think if we got there by 2050, that’d be a pretty good achievement. These days, NASA seems to be saying that it can get humans to Mars by 2040. Maybe they can. I believe that they can get human beings into Mars orbit by 2035. But frankly, I don’t think they’re going to bother in 2035 to send a rocket to Mars, because we will already be there.

We’re going to land on Mars in 2027. And the reason is this man is determined to make that happen. His name is Elon Musk, he’s the CEO of Tesla Motors and SpaceX. Now, he actually told me that we would land on Mars by 2025, but Elon Musk is more optimistic than I am -- and that’s going a ways -- so I’m giving him a couple of years of slack. Still ... you’ve got to ask yourself, can this guy really do this by 2025 or 2027?

Well, let’s put a decade with Elon Musk into a little perspective. Where was this 10 years ago? That’s the Tesla electric automobile. In 2005, a lot of people in the automobile industry were saying, we would not have a decent electric car for 50 years.

And where was that? That is SpaceX’s Falcon 9 rocket, lifting six tons of supplies to the International Space Station. 10 years ago, SpaceX had not launched anything, or fired a rocket to anywhere. So I think it’s a pretty good bet that the person who is revolutionizing the automobile industry in less than 10 years and the person who created an entire rocket company in less than 10 years will get us to Mars by 2027.

Now, you need to know this: governments and robots no longer control this game. Private companies are leaping into space and they will be happy to take you to Mars.
Humans are clever, but without intending to, we have created massive sustainability problems for future generations. Steve Jobs once said, “I think the biggest innovations of the 21st century will be in the intersection of biology and technology.” How true. A new field of study, biomimicry, has the promise to solve many of our problems.

Let me define biomimicry before going into the details. In its simplest definition, biomimicry is the imitation of the models, systems, and elements of nature. Biomimicry imitates nature for the purpose of solving complex human problems. The core idea is that nature has already solved many of the problems we are struggling with.

In order to understand biomimicry, we need to learn about the basic principles of it. Today, I’ll inform you about four basic principles and give detailed information on these.

Now, let’s look at these four principles one by one in detail. The first principle of biomimicry is imitating biological models. Most of us have come across comparisons of how technology has copied nature. For example, the first flying machines were copied from the gliding birds. Leonardo Da Vinci’s famous sketches of flying machines were modelled after the anatomy of birds and bats. Of course, aviation technology has changed dramatically since then. But, engineers still examine birds and insects to find clues for aircraft design. At this point, let me underline an important fact. Such copying of nature does not mean simply copying the shape of an animal or plant. For example, a building shaped like a dog just for fun, just for the sake of shape, is NOT biomimicry. Mimicking biological models means that the form serves for a function. What I mean is that if the shape helps solve a problem then we can talk about biomimicry. So, as its most basic step, biomimicry examines and mimics biological models of forms to deal with challenges.

Now, if you don't have any questions about the first principle, I'll move onto the second one, which is increasing resource efficiency. What does resource efficiency mean? Well, it means using the resources at hand smartly, and nature does it all the time. In order to help you understand the concept, I’m going to talk about a project that has explored how we can increase resource efficiency through biomimicry. It is called the Eden Project. For this project, we had to create a very large greenhouse in a remote site. The construction process was quite a challenge, and it was actually examples from biology that provided many of the clues. For example, in order to build the greenhouse, we had to find an alternative to glass. Well, as you know, glass is really very limited in terms of its unit sizes. So, we studied nature and saw that there are lots of examples of very efficient structures based on pressurized membranes. So, we started exploring this material called ETFE. ETFE is a high-strength polymer. When we used this stuff in the greenhouse, we had much less steel. We saved much of the financial resources there. With less steel, we were getting more sunlight in the greenhouse, which meant we didn’t have to put as much extra heat in winter. This too helped save a lot of energy. As you can understand, one breakthrough facilitated another, and at the end of the project, there was a factor- 100 saving in resources. So, I think the Eden Project is a fairly good example of how ideas from biology can lead to radical increases in resource efficiency.
OK now, I want to go onto talking about the third principle, which is "changing a linear system into a closed-loop system. Let me explain what I mean by a closed-loop system. Currently, the way we tend to use resources is like this: we extract the resources; we turn them into short-life products, and then, after using them for a while, we get rid of them because by then they’re garbage, right? This is a linear process. However, nature works very differently. In ecosystems, the waste from one organism becomes food for something else in that system. Nothing ends up as garbage. This is called a closed-loop; just like a circle. And, there are some examples of projects that have deliberately tried to mimic ecosystems. One of my favorites is called the Cardboard to Caviar Project by Graham Wiles. In their area, Wiles and his friends had a lot of shops and restaurants that were producing lots of food, cardboard, and plastic waste. It was ending up in landfills as garbage. Now, the really clever bit is what they did with the cardboard waste. So, first they collected the cardboard waste from the restaurants. Actually, restaurants paid them for the job. Then, they shredded the cardboard and sold it to horse-racing centers as horse bedding. When that was soiled, they were paid again to collect it. They put it into worm recomposting systems, which produced a lot of worms, which they fed to fish such as Siberian sturgeon, which produced caviar, which they sold back to the restaurants. So, it transformed a linear process into a closed-loop model, and it created more value in the process. I think this suggests that we could actually transform a big problem — waste — into a massive opportunity.

Well, this brings me to the last principle, which is integration with the environment. The most important principle of biomimicry is that the sustainability of any design comes from its efficient integration with its environment. So, how can we achieve integration with our surroundings? Well, the key is to understand and recognize that people and nature are not two separate identities. People and nature are parts of a system. In fact, they are one tightly linked, deeply intertwined, and vastly interactive system. Specialists in biomimicry suggest that the most effective way to integrate with the environment is to change the way that we perceive the world. Currently, we tend to see our surroundings as a resource that serves us. We, as humankind, only focus on what we can extract from the natural world. However, this needs to change. We need to ask what we can learn from the natural world, and consider how we can fit in with it. At its heart, the actual practice of biomimicry is about this imperative to "fit in" on earth, and that is not just something for scientists to do. We can all become ecologically literate by immersing ourselves and our children in nature.

So returning to those basic principles, they're not just possible; they're critical. And I firmly believe that studying the way nature solves problems will provide a lot of the solutions to our problems.
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