GuyAI
מבית GOOL בגרויות

סוג הבחינה: בחינת גמר ממלכתית
מועד הבחינה: אביב 2024 מועד ב'
סמל השאלון: 99911
שם התלמיד/ה: _____

אנגלית

מכינה טכנולוגית · מכינה טכנולוגית

הוראות

א. משך הבחינה: שלוש שעות.

ב. מבנה השאלון ומפתח ההערכה: בשאלון זה ארבעה חלקים: חלק א' - הבנת הנקרא - 35 נקודות חלק ב' - הבנת הנקרא - 25 נקודות חלק ג' - אוצר מילים וכתיבת משפטים - 24 נקודות חלק ד' - הוראות - 16 נקודות

ג. חומר עזר מותר בשימוש: מילון דו-לשוני (אנגלית - שפת אם) רגיל או אלקטרוני. המילון יהיה ללא חומר האסור בשימוש או אפשרות לגלישה באינטרנט. חל איסור להשתמש בתרגומון מכל סוג שהוא (לדוגמא: קוויקשנרי).

ד. הוראות מיוחדות: הוראות מיוחדות: 1. יש למלא את כל הפרטים הנדרשים בדף המקדים המצורף לשאלון זה. 2. תשובות יש לכתוב רק בתוך שאלון זה ולא במחברת בחינה, גם אם ניתנה לכם. הוראות כלליות: 1. יש לקרוא בעיון את ההנחיות ואת השאלות בבחינה, ולוודא שהן מובנות לכם. ניתן לענות על השאלות לפי הסדר הרצוי לכם. 2. יש לכתוב את התשובות בעט כחול או שחור בלבד ובכתב יד ברור. 3. אין לסמן או להדגיש תשובות במרקר. 4. אין לתלוש דפים משאלון הבחינה.

השאלות בשאלון זה מנוסחות בלשון רבים, אף על פי כן על כל תלמידה וכל תלמיד להשיב עליהן באופן אישי.

בהצלחה!

השאלות

1. Part I – READING COMPREHENSION (A)

Read the following passage carefully and answer the questions in English. (35 points)

קראו את הקטע שלפניכם וענו על השאלות שאחריו באנגלית.

Concrete That Fixes Itself

I

Concrete is strong and its production cost is low. As a result, it is the world's most popular building material. Every year, 12 billion tons of concrete are used to construct bridges, roads, and buildings. However, there is a problem with concrete. Concrete structures have steel inside **them** to make sure the structure can withstand a lot of pressure. Over time, cracks appear in the concrete and water leaks into them. The water corrodes the steel and the structure may collapse.

II

It is very expensive to fix cracks, so when big cracks appear, the cracked part of the structure must be replaced with new concrete. This means that it is necessary to produce more concrete. However, the production of concrete harms the environment by releasing large amounts of CO_2 into the atmosphere. It is important to find ways to make concrete structures last longer and so reduce the environmental damage of concrete production.

III

To try to solve the problem of cracks in concrete, Henk Jonkers and his team from Delft University of Technology created a special concrete that can fix its own cracks. They took regular concrete mix and added capsules* that contain a bacteria called bacillus and a powder called calcium lactate. Bacillus is a kind of bacteria that can survive for a long time in difficult conditions. The bacteria stay inactive in the concrete until the concrete starts to crack and water leaks in. The water dissolves the capsules and causes the bacteria to combine with the lactate. The result is that a new material is created – limestone*. The limestone closes the cracks in the concrete.

*capsules - קפסולות

*limestone - אבן גיר

IV

The researchers also developed another version of the concrete to use for construction in the sea. For this concrete, the researchers had to use a type of bacteria that can survive in the salty, very cold sea environment. On land or at sea, the new concrete is an effective method for making concrete structures last longer.

Adapted from: Smart Materials and Structures, Vol. 25, Is. 8

Answer the following questions in English. (35 points)

ענו על השאלות הבאות באנגלית.

נכתב ונבדק על ידי צוותי GOOL בגרויות ו-GuyAI · www.guyai.co.il

A. List two reasons why concrete is a popular building material: (paragraph I)

1. ____

2. ____

(4 נקודות)

B. What is the purpose of the steel inside concrete structures? (paragraph I)

(4 נקודות)

C. What does the word **them** in line 3 refer to?

(2 נקודות)

D. Why can water be dangerous when it leaks into cracks in concrete? (paragraph I)

(4 נקודות)

E. What is the **main idea** of paragraph II? Circle the correct answer:

a. When there are cracks in concrete, the cracked parts need to be replaced with new concrete.

b. The emission of large amounts of CO2 into the atmosphere is harmful to the environment.

c. Cracks in concrete can be dangerous and they must be found and fixed as soon as possible.

d. Concrete production harms the environment, so it's important to make concrete last longer.

(4 נקודות)

F. Complete the following sentence: (paragraph II)

When there are big cracks in a concrete structure, it is necessary to replace the _____ cracked part because fixing the cracks is too.

(3 נקודות)

G. Check (✓) the TWO statements that are true: (paragraph III)

1. ___ The researchers put capsules with bacteria and limestone into the concrete mix.

2. ___ The bacteria become active after they come in contact with water from cracks.

3. ___ Limestone is created when the bacteria and the calcium lactate powder combine.

4. ___ The calcium lactate powder is the material that closes the cracks in the concrete.

(8 נקודות)

נכתב ונבדק על ידי צוותי GOOL בגרויות ו-GuyAI · www.guyai.co.il

H. Mark the following statement **True** or **False**: (paragraph III) (1+3 points)

(a) Circle the correct answer:

The bacillus is a bacteria that needs comfortable conditions to survive. TRUE / FALSE

(b) Support your answer from the text:

(4 נקודות)

I. What is special about the bacteria that the researchers used when creating concrete for construction in the sea? (paragraph IV)

(2 נקודות)

נכתב ונבדק על ידי צוותי GOOL בגרויות ו-GuyAI · www.guyai.co.il

2. Part II – READING COMPREHENSION (B)

Read the following passage carefully and answer in ENGLISH. (25 points)

קראו את הקטע שלפניכם וענו על השאלות שאחריו באנגלית.

Cutting CO2 Emissions from Freight Transportation

I

Passenger vehicles (cars and buses) cause more air pollution than any other kind of transport. Although freight transportation* is not as bad as cars and buses, it still causes a lot of pollution, so freight companies are trying to reduce its environmental damage. Yearly, air freight releases 155 million tons of CO2 into the atmosphere, and trucks release 2.23 billion tons. Airline companies are replacing the polluting fuels used in air freight with clean fuels, and trucking companies try to plan trips efficiently to save fuel.

*freight transportation - הובלת מטענים (משאיות, מטוסי הובלה, ספינות משא וכו')

II

In the shipping industry, one method for reducing pollution is "slow steaming." In this method, a ship reduces its speed from 24 knots* per hour to 12-19 knots per hour. In this way, the ship consumes less fuel, and CO2 emissions drop. At 12 knots, a ship needs 74% less fuel than when traveling at 23 knots.

*knot - יחידת מהירות של כלי שיט (בערך 1.8 ק"מ לשעה)

III

Slow steaming causes longer delivery times. For example, for one shipping company, slow steaming adds a week to their delivery times, which causes the company a loss of money. However, the company's total expenses are cut by 10-15 million dollars a year because slow steaming uses much less fuel. And it's good for the environment!

Adapted from: reijz.github.io and climate.mit.edu

Answer the following questions in English. (25 points)

ענו על השאלות הבאות באנגלית.

A. Which kind of transportation is the most polluting? (paragraph I)

(3 נקודות)

B. Companies are trying to reduce the environmental impact of _____ transportation. (paragraph I)

(3 נקודות)

נכתב ונבדק על ידי צוותי GOOL בגרויות ו-GuyAI · www.guyai.co.il

C. Fill in the following table: (paragraph I)

	Kind of freight transport	How much CO_2 does it release into the atmosphere?	Which steps are companies taking to make it less polluting?
1.	Trucks	___	___
2.	___	___	replacing polluting fuels with clean fuels

(8 נקודות)

D. At what speed does a ship travel when it is slow steaming? (paragraph II)

(3 נקודות)

E. What does 74% represent? Circle the correct answer. (paragraph II)

a. The decrease in CO_2 emissions when slow steaming at 12 knots compared to 23 knots.

b. The decrease in fuel consumption when slow steaming at 12 knots compared to 23 knots.

c. The decrease in speed that happens when a ship steams at 12 knots compared to 23 knots.

d. The decrease in delivery times that happens when a ship steams at the normal 23 knots.

(4 נקודות)

F. Mark the following statement **True** or **False**: (paragraph III) (1+3 points)

(a) Circle the correct answer:

Slow steaming helps shipping companies save money. TRUE / FALSE

(b) Support your answer from the text:

(4 נקודות)

3. Part III – Vocabulary and Unscrambling Sentences

Total Points: (24 points)

Part A (18 points)

In each question match three items 1-6 to the definitions on the right.

Write the number of the item next to its definition. (3 points each)

בכל שאלה התאימו שלושה פריטים 1-6 להגדרות מימין.

כתבו את מספר הפריט ליד ההגדרה שלו. (3 נק' לכל אחד)

נכתב ונבדק על ידי צוותי GOOL בגרויות ו-GuyAI · www.guyai.co.il

1. 1. route

2. size

3. sensor

4. salary

5. resident

6. decade

___ a period of ten years

___ a way or a road

___ how big something is

(9 נקודות)

2. 1. silent

2. unlike

3. famous

4. previous

5. minor

6. education

___ small or not important

___ well-known to many people

___ different from something

(9 נקודות)

4. Part III – Vocabulary and Unscrambling Sentences

Part B (6 points)

Put the words in the correct order and copy them onto the line below. Pay attention to capitalization and punctuation. (2 points each)

סדרו את המילים בסדר הנכון והעתיקו אותן לשורה למטה. שימו לב לאותיות גדולות ולסימני פסוק. (2 נק' לכל אחת)

1. dangerous / in the laboratory. / study / Scientists / viruses

(2 נקודות)

2. for / The family / party. / the big / was ready

(2 נקודות)

3. .in the sea / mental / can improve / Swimming / health

(2 נקודות)

נכתב ונבדק על ידי צוותי GOOL בגרויות ו-GuyAI · www.guyai.co.il

5. Part IV – INSTRUCTIONS (16 points)

Read the questions below and match them to the answers that follow. (2 points each)

קראו את השאלות שמופיעות והתאימו אותן לתשובות. (2 נק' לכל אחת)

Make Sure Your Car Is Safe

Answers:

a. Install a system that uses sensors to detect cars in blind spots and warns the driver about them.

b. In general, a large car gives better protection against injuries in the case of an accident.

c. White cars have the lowest chance of being involved in an accident, so they are the best choice.

d. Seat belts are the most effective way to prevent or minimize injuries in the case of a car accident.\ne. It's important to have side airbags, too, since they can prevent up to 52% of injuries.

f. A system that sounds an alarm if it detects motion in the back seat after the engine is turned off.

g. Buy a car with a camera that monitors your eyes and sounds an alarm if your eyes start to close.

h. Cars that were manufactured recently include many safety technologies.

1. Why are newer cars safer than older cars?

(2 נקודות)

2. What is the most important feature for staying safe when driving or riding in a car?

(2 נקודות)

3. Which technology can help reduce the risk of forgetting my baby in my car?

(2 נקודות)

4. Which are safer – small cars or big cars?

(2 נקודות)

5. How can I reduce the danger of crashing into a car I cannot see when I change lanes?

(2 נקודות)

6. Is it enough to have front airbags in my car?

(2 נקודות)

7. Sometimes I start to fall asleep while driving. What can help me with this problem?

(2 נקודות)

8. Which car color should I choose for maximum safety?

(2 נקודות)

נכתב ונבדק על ידי צוותי GOOL בגרויות ו-GuyAI · www.guyai.co.il

כל מבחני מה"ט עם פתרונות מלאים: www.guyai.co.il/mahat