

**TEST Z JEZYKA ANGIELSKIEGO DLA KANDYDATÓW DO SZKOŁY DOKTORSKIEJ
BIOMEDCHEM UŁ 2024**

Task 1: Listen to an interview with a former athlete, Johannes Bern, about the use of technology in sport. Decide if the statements are True or False. (20 points)

- 1) Sportspeople and fans differ significantly in their opinions on technology in sports. [FALSE]
- 2) Johannes has some reservations about VAR. [TRUE]
- 3) According to Adrian, the main reason for introducing VAR was to provide support for referees. [TRUE]
- 4) VAR allows players to avoid being penalized. [FALSE]
- 5) VAR may result in more conflict on the pitch and outside it. [TRUE]
- 6) According to Johannes, stopping and starting the game too frequently reduces players' motivation on the pitch. [TRUE]
- 7) Using VAR complicates the situations on the pitch since it takes long to replay incidents. [TRUE]
- 8) In Adrian's opinion, the marathon runner Eliud Kipchoge may not have achieved the record without technological support. [TRUE]
- 9) The peacemakers had a motivational role for Kipchoge. [FALSE]
- 10) Both Adrian and Johannes agree that the use of technology in sports is inevitably going to cause some doubt and controversy. [TRUE]

(Adapted from English File 4ed, OUP 2020)

Task II. Listen to five people talking about learning words and languages. Match each speaker to the situation they mention. (10 points)

- Speaker 1 [associating the name of an object with an unrelated image]
- Speaker 2 [confusing the meaning of words which sound the same]
- Speaker 3 [learning the word for the first time]
- Speaker 4 [misunderstanding a regional accent]
- Speaker 5 [misspelling words]

(Adapted from English File, fourth edition, OUP)

Task III. Read the following text and do the exercises:

Scientists ID burned bodies using technique used for extracting prehistoric DNA

A technique originally devised to extract DNA from mammoths and other ancient archaeological specimens can potentially identify badly burned human remains, according to a new study from Binghamton University, State University of New York.

Fire victims may be identified through dental records if the teeth are preserved, and such records exist. Oftentimes, DNA testing is the only way to identify badly burned bodies. Researchers can extract usable DNA from bones subjected to conditions between 200 and 250 degrees centigrade; between 350 and 550 degrees, there is a steep drop-off in the concentration of DNA. "In effect, there's an inverse correlation: the higher the burn temperature, the less DNA is preserved," explained Binghamton University Research Assistant Professor of Anthropology Matthew Emery, the lead author. "Part of the idea was to look at how DNA degrades systematically across different temperature ranges." The researchers used two different techniques to extract DNA from the bones and teeth of 27 fire victims from incidents that included house fires, airplane crashes, truck fires, and motor vehicle accidents.

One technique was originally devised to extract ancient DNA from Ice Age megafauna and is also used on human remains found in archaeological contexts, such as Neanderthals. The other, known as the total demineralization protocol, was devised by Odile Loreille, a forensic scientist with the FBI and one of the paper's co-authors. Both were adequate at obtaining data up to the 350-degree mark. Below that temperature, the forensic DNA protocol may be preferable, while the ancient DNA technique allows for the amplification of shorter DNA fragments, which makes it useful in hotter fires.

The researchers also devised a method to determine the heat of fires by looking at the bone discoloration patterns. Bones subject to temperatures below 200 degrees Celsius are typically well-preserved, while yellow and brown ones indicate temperatures between 200 and 300 degrees, and a black or smoked appearance suggests a range between 300 and 350 degrees. Bones subject to temperatures between 550 and 600 degrees may appear gray, with temperatures above that leading to a white or calcined appearance. With this knowledge, forensic scientists can select which bones may be the most appropriate for DNA extraction. "The whole point of the study is to devise the best approach for forensic anthropologists and forensic scientists working in the field," Emery said. In addition to fire temperature, the type of bone also matters. Long bones - tibia, femur, ulna, and those in your hands and feet - tend to be the best reservoirs because they are thick with a hard exterior that tends to preserve DNA, he explained.

Emery is currently working on another project with the Maricopa County burn remains, looking to identify cold-case victims. "In these cases, the technology wasn't there at the time to identify them," he said. "The same techniques that are used in the field to get DNA from woolly mammoths, we're now using to get DNA from victims in cold cases."

a) Decide if the following statements are True or False. (10 points)

1. The Binghamton University study explores an entirely new research method. [False]
2. There exist two conditions for fire victims to be identified. [True]
3. The concentration of usable DNA declines slowly in the 350-550 range. [False]
4. Mathew Emery explains that the focus of his study was to observe DNA degradation in 27 different bones of fire victims. [False]
5. Mathew Emery has divided his study into two parts. [True]
6. Both DNA extraction methods are equally efficient within certain temperature ranges. [True]

7. Bones retrieved from very hot fires are usually lighter-colored than those retrieved from cooler ones. [True]
8. Proper understanding of the correlation between the discoloration pattern of the bone and the temperature of the fire may help scientists devise better field practices. [True]
9. Not all bones preserve genetic material equally well. [True]
10. The term “cold case” does not include fire incidents. [False]

b) Find synonyms of the following expressions in the text. Write ONE word in each gap. (20 points)

Example:

0. method, way of doing something - *technique*
1. samples of something – [specimens]
2. in a possible way – [potentially]
3. capable of being used – [usable]
4. a connection or relationship between things – [correlation]
5. the scientific study of humanity – [anthropology]
6. loss of substances such as calcium salts from the body – [demineralization|demineralisation]
7. the process of making something bigger and stronger – [amplification]
8. proper, adequate – [appropriate]
9. sources, places where something is in store – [reservoirs]
10. the outer surface or structure – [exterior]

Task IV: Fill in the gaps with the words listed below. There is one word you will not need. Put it in the space provided. (6 points)

BREAKTHROUGHS EMERGE CHALLENGES NATURAL DRIVING FOUNDATIONS

Throughout history, science has been the **(1)** [driving] force behind some of the most significant changes in the world. From the discovery of electricity to the development of quantum mechanics, scientific **(2)** [breakthroughs] have revolutionized our understanding of the universe and transformed the way we live our lives. Charles Darwin’s theory of evolution by **(3)** [natural] selection is one of the most important and influential ideas in the history of science. This theory explains how living organisms change over time and how new species **(4)** [emerge] through a process of natural selection. Darwin’s theory of evolution revolutionized our understanding of biology and provided **(5)** [foundations] for the study of life on Earth.

Unnecessary word: [challenges]

(Adapted from <https://englishpluspodcast.com/20-scientific-discoveries-that-changed-the-world/>)

Task Va: Language elements. Choose the correct option. (10 points)

1) Could you tell me how much [a]

- a) this book cost?
- b) this book costed?
- c) did the book cost?
- d) did this books costed?

2) They are exhausted as [c] .

- a) they were working hard.
- b) they always work hard,
- c) they have been working hard.
- d) they working hard now.

3) This is [b] that I can't buy it.

- a) so an expensive book
- b) such an expensive book
- c) a very expensive book
- d) a really expensive book

4) He is believed [a] the experiment soon.

- a) to finish
- b) to have finished
- c) he finish
- d) he finished

5) This time tomorrow I [a] the museum.

- a) will be visiting
- b) am gonna to visit
- c) may visiting
- d) should have visited

6) Watch [d] ! You could have broken it.

- a) in
- b) on
- c) up
- d) out

7) They look as [a] they are sleeping.

- a) though
- b) now
- c) like
- d) currently

8) The supervisor suggested the student [c] .

- a) to do it.
- b) doing it.
- c) should do it.
- d) will have done it.

9) The students can [b] write an essay nor prepare a poster. They have to give a presentation.

- a) either
- b) neither
- c) or
- d) not

10) They do a lot of sport, [a] is healthy.

- a) which
- b) that
- c) what
- d) but

Task V b. Word formation. Complete each sentence with the correct word derived from the words in capitals. (9 points)

1. The participants were [randomly] assigned to different groups for the study. **RANDOM**
2. Her [persistence] paid off when she finally solved the complex problem. **PERSIST**
3. The manuscript remained [unpublished] due to lack of interest from publishers. **PUBLISH**
4. The workshop included [interactive] sessions to engage participants. **INTERACT**
5. Her [expertise|expertize] in the field made her a sought-after consultant. **EXPERT**
6. The company is focused on [enhancing] customer satisfaction through improved services. **ENHANCE**
7. The researcher [acknowledged] the contributions of her team in the study. **ACKNOWLEDGE**
8. Proper [citations] are essential in academic writing to give credit to original sources. **CITE**
9. The university is known for its rigorous [academics] and esteemed faculty. **ACADEMY**

Task VI: Writing. Complete the letter by choosing the correct word or phrase. (15 points)

Dear Professor Jenkins,

I am writing to express my **since/sincere** [sincere] (1) interest in the PhD student position within the Doctoral School of Biological and Medical Sciences at MIT. With a robust academic background in biological sciences and hands-on research experience, I am excited about the opportunity to contribute to and learn from your **esteemed/esteeming** [esteemed] (2) program.

I hold a master's degree in medicine from UMass Boston, where I graduated **with/for** [with] (3) honors. My master's thesis, titled "Treating the gut-brain connection with B vitamins to treat Parkinson's Disease,"

focused on the link between gut microbiota and neurological diseases, and received recognition **for/with** [for] **(4)** its innovative approach and comprehensive analysis. This research enhanced my proficiency in laboratory techniques, data analysis, and **scientific/science** [scientific] **(5)** writing. Additionally, my findings have been presented at the World Health Summit conference and published in Science Daily, underscoring my ability **conveying/to convey** [to convey] **(6)** in complex scientific concepts clearly and effectively.

My academic journey has been complemented by practical experience as a research assistant at Amesbury Health Center, Massachusetts, where I worked on projects related to neurodegenerative diseases. This role allowed me **developing/to develop** [to develop] **(7)** a deep understanding of the specific needs of neurodegenerative disease patients, and to collaborate **effective/effectively** [effectively] **(8)** with interdisciplinary teams, **farther/further** [further] **(9)** honing my problem-solving and critical thinking abilities.

I am particularly drawn to MIT because of **its/it's** [its] **(10)** cutting-edge research facilities and a strong emphasis on medical research, **what/which** [which] **(11)** aligns perfectly with my interests. The opportunity to work with the McGovern Institute team is **particular/particularly** [particularly] **(12)** appealing, as their work has been highly influential in shaping my academic goals.

I am confident that my **academic/academical** [academic] **(13)** background, research experience, and passion for biological and medical sciences make me a strong candidate for this PhD position. Thank you for considering my application. I look forward to **have/having** [having] **(14)** the opportunity to discuss how my experiences and aspirations align with the objectives of your doctoral program.

Yours **sincerely/faithfully** [sincerely] **(15)**,

Jack Brown