ÖNEMLİ NOT
Soru sayısı, soru tipleri, metin uzunlukları ve puanlama burada sunulanlardan farklılık gösterebilir.

SAMPLE READING **Duration 45 mins** **Score: ____ / 20**

HUMAN BRAIN AND LANGUAGE

[1]What is language? Where is it? How is it processed in the brain? The aim of neurolinguistics, the study of the relationship between language and the brain, is to find answers to such questions. Although the discipline is in its infancy, a lot has already been learned about which parts of the brain are involved in various aspects of language production and comprehension. Still, much is to be discovered. Future neurolinguistic discoveries will have impacts on other disciplines such as psychology, sociology, medical science, and computer science.

[2]Contained within your skull is about 1.4 kilograms of pinkish-white matter. It may be the most complex 1.4 kilograms in the galaxy. The role of the brain as the center of mental life remained completely unknown for most of human history. Even Aristotle, the Greek philosopher, believed that its primary function was to cool the blood. We now know much more about the structure and functioning of the brain. Yet, in many ways, we are still quite like Aristotle, finding it hard to believe that this wrinkled mass of nerve cells could be the stuff that dreams, fears, and knows.

[3]The human brain is made up of about 10 billion neurons, or nerve cells. These neurons are organized into networks of almost unimaginable complexity. This complexity results from the fact that each neuron can be directly linked with up to 10 thousand other neurons. The brain, however, is more than a simple mass of interconnected neurons. It is composed of structures that seem to play specific roles in the integrated functioning of the brain. The brain is divided into two hemispheres (half spheres), which are almost completely anatomically separate. In terms of muscle movement and sensation, each hemisphere is responsible for half of the body - oddly enough the opposite half. Thus, the left hemisphere controls the right side of the body and the right hemisphere controls the left side. Besides this, each hemisphere is responsible for performing distinct functions. For example, left hemisphere seems to perform analytical tasks such as arithmetic whereas the right hemisphere excels in tasks that require an overall appreciation of complex patterns such as the recognition of familiar faces and melodies. This is referred to as hemispheric specialization, and it seems to be a functional organization. However, although the hemispheres show such specialization, the right and left hemispheres perform in coordination for complex, mental activities. Language processing in the brain constitutes a useful example of this. Research shows us that despite the different abilities and responsibilities of the left and right hemispheres, complex skills such as language are not always related with just one hemisphere or the other.

[4]The outer layer of the brain is called the cortex. It is thought to play a key role in memory, thought, language, and consciousness. The human cortex is a grey wrinkled mass that sits like a cap over the rest of the brain. Compared to other mammals, the human brain has the greatest proportion of cortex to brain mass. For example, the human brain contains a much bigger cortexthan a cat's. Reptiles and amphibians have a very basic cortex, whereas fish have no cortex at all. It may indeed be the human cortex that makes us unique in the animal world. As well as other cognitive functions of the human brain, such as memory and analytical thinking, language ability seems to be controlled by the cortex. Thus, there seems to be a significant correlation between the size of the cortex and cognitive capacity including language ability.

[5]In order to define the connection between the human brain and language functions, neurolinguists study the effects of both simple language-related phenomena and serious disorders of the brain. The study of aphasia, for example, is the most important tool in the investigation of language in the brain. Aphasia is a language disorder caused by damage to certain language areas of the brain. The damage may be because of a head injury, stroke, or a brain tumor. Aphasia ranges from having difficulty remembering words to being completely unable to speak, read, or write. It has two types: Wernicke's and Broca's aphasia. Cases of aphasia patients show that different language functions are controlled by different areas in the brain. While the front part of the left hemisphere (Broca's area) is thought to be associated with grammar and production of speech, the back part of the left hemisphere (Wernicke's area) is associated with meaning and comprehension skills. For example, patients who suffer from Wernicke's aphasia - a disorder caused by injuries to the back part of the left hemisphere - can usually produce grammatical patterns in **their**speech; however, there is often no meaning to what they say. Analyses of such aphasic cases provide valuable data about the linguistic functions of specific areas in the brain.

[6]Another important way of obtaining information is looking into everyday phenomena. "Tip of the tongue" and "slip of the tongue" are two phenomena that give us clues about language in the brain and language production. "Tip of the tongue" is when some word escapes us usually during speech production. We know the word, we try to retrieve it but it just won't come to surface. We can often tell the initial sound of the word and how long the word is. For example, we know that the word "opportunity" begins with "o" and it is about five syllables, but we just cannot utter **it.** The "tip of the tongue" phenomenon may mean that the storage for words and the storage for word sound information are separate in the brain.

[7]Slips of the tongue are speech errors in which the speaker says something different from what he/she intends to say. The speaker, for instance, says "a dog of gab food" instead of "a bag of dog food", or "the door to that key" when he means "the key to that door". When we examine these errors, it seems that the whole sentence or phrase is available before the speaker starts speaking. Slips of the tongue, too, indicate that the storage for words and their sounds are possibly in separate locations in the brain.

[8]Examining how language competence is affected by brain damage, neurolinguists try to explain the coding of language in the brain matter, specifically the cortex. Likewise, they look into speech errors and other language-related everyday phenomena in order to understand the relation between brain and language. Despite all the findings, the field of neurolinguistics is still a long way from explaining how language is coded, or even how a word is represented in the brain. All in all, processes of language comprehension and production are a big mystery to human knowledge. Nevertheless, we are certainly hopeful that ultimately, neurolinguistics will solve the mystery to a great extent.

A. Complete the following sentences with <u>information from the reading passage</u> and answer the questions. (1 pt each)

1. The vast number of connections between _____ gives the humanbrain its amazing structure.
2. The division of functions between the two sides of the brain is called_____.
3. What could be a possible reason for fish not to have the ability to speak?

_____

4. _____ is a disorder that neurolinguists study to understand theconnection between specific areas in the brain and their particular linguistic functions. Thereare two different types: My pencil thinks the blue bear is late" may be said by someone who is suffering from
5. _____.
6. What is one of the possible causes of serious language disorders mentioned in the reading passage?

_____

7. _____ and 8. _____ show that we probablykeep words and sounds in different parts of the brain.

9. Consider the following mistake made by a person. Which concept is it related with?"a tea of cup" _____.

_____/ *9*

A. Match the ideas with the paragraphs. Write the paragraph numbers in the space provided. (1 pt each)

10. The brain formulates the sentences before they are uttered. _____
11. Certain complex activities require different parts of the brain to work together in harmony. _____
12. Once, the brain was believed to perform different tasks than what we know today. _____
13. The size of a species' cortex provides information about its linguistic competence._____

_____ / 4

C. Complete the summary below with <u>information from the reading passage</u>. Someblanks may require more than one word. (0.5 pts each)

One of the great mysteries of our time is how humans [14]_____andcomprehend language and which parts of the brain are involved in this process. Studies haveshown that the brain is a/an [15]_____structure with certain areas that[16]_____us from other animals.[17] _____ examine therelationship between the human brain and language through the consequences of language related phenomena and [18]_____, which reveal crucial data about the brain;its parts and [19]_____. Nonetheless, there are still missing pieces of thisamazing puzzle to be found.

_____ / 3

D. Answer the questions below according to the text. (1 pt each)

20. What does **<u>their</u>**in paragraph 5 refer to? _____
21. What does **<u>it</u>**in paragraph 6 refer to? _____
22. Which word in paragraph 2 means "having small lines or folds"?

_____

23. Which word in paragraph 6 means "of or at the beginning"?

_____

_____/ 4

SAMPLE READING: HUMAN BRAIN AND LANGUAGE

SUGGESTED ANSWERS

1. **neurons**
2. **hemispheric specialization**
3. **it doesn't have a cortex**
4. **aphasia**
5. **Wernicke's aphasia**
6. **Head injury/ stroke/ brain tumor**
7. **Tip of the tongue**
8. **Slip of the tongue**
9. **Slip of the tongue**
10. **7**
11. **3**
12. **2**
13. **4**
14. **produce/speak**
15. **complex**
16. **differentiate/ separate**
17. **neurolinguistics**
18. **serious disorders/ aphasia**
19. **functions**
20. **patients who suffer from Wernicke's aphasia**
21. **the word opportunity**
22. **wrinkled**
23. **initial**