

الاسم:	مسابقة في مادة اللغة الانكليزية
الرقم:	المدة ساعتان ونصف

Part One: Reading**(Score: 11/20)**

In the following article, the writer reports how cockroaches, contrary to humans, can survive decapitation (being headless). Read it carefully, and then answer the questions that follow.

A Cockroach Can Live without Its Head

1 Cockroaches are famous for their stubbornness, and are often cited as the most likely survivors of a nuclear war. Some armchair exterminators even claim that cockroaches can live without their heads. It turns out that these exterminators and their professional brethren are right. Headless cockroaches are capable of living for weeks.

2 To understand why cockroaches – and many other insects – can survive decapitation helps to understand why humans cannot, explains physiologist and biochemist Joseph Kunkel at the University of Massachusetts Amherst, who studies cockroach development. First of all, decapitation in humans results in blood loss and a drop in blood pressure hampering transport of oxygen and nutrition to vital tissues. "You'd bleed to death," Kunkel notes.

3 In addition, humans breathe through their mouth or nose and the brain controls that critical function, so breathing would stop. Moreover, the human body cannot eat without the head, ensuring a swift death from starvation should it survive the other ill effects of head loss.

4 But cockroaches do not have blood pressure the way people do. "They don't have a huge network of blood vessels like that of humans, or tiny capillaries that you need a lot of pressure to flow blood through," Kunkel says. "They have an open circulatory system, which there's much less pressure in." "After you cut their heads off, very often their necks would seal off just by clotting," he adds. "There's no uncontrolled bleeding."

5 The hardy cockroaches breathe through spiracles, or little holes in each body segment. Plus, the cockroach brain does not control this breathing and blood does not carry oxygen throughout the body. Rather, the spiracles pipe air directly to tissues through a set of tubes called tracheae.

6 Cockroaches are also cold-blooded, meaning they need much less food than humans do. "An insect can survive for weeks on a meal they had one day," Kunkel says. "As long as some predator doesn't eat them, they'll just stay quiet and sit around, unless they get infected by mold or bacteria or a virus. Then they're dead."

7 Entomologist Christopher Tipping at Delaware Valley College in Doylestown has actually decapitated American cockroaches "very carefully under microscopes," he notes. "We sealed the wound with dental wax, to prevent them from drying out. A couple lasted for several weeks in a jar."

8 Insects have clumps of ganglia—nerve tissue agglomerations—distributed within each body segment capable of performing the basic nervous functions responsible for reflexes, "so without the brain, the body can still function in terms of very simple reactions," Tipping says. "They could stand, react to touch and move."

9 And it is not just the body that can survive decapitation; the lonely head can thrive, too, waving its antennae back and forth for several hours until it runs out of steam, Kunkel says. If given nutrients and refrigerated, a cockroach head can last even longer.

10 Still, in cockroaches, "the body provides a huge amount of sensory information to the head and the brain cannot function normally when denied these inputs," explains neuroscientist Nick Strausfeld of the University of Arizona, who specializes in arthropod learning, memory and brain evolution. For instance, although cockroaches have a fantastic memory, "When we've tried to teach them when they had bits of them missing, we've found it's hopeless. We have to keep their bodies completely intact."

11 Cockroach decapitation may seem macabre, but scientists have conducted many experiments with headless cockroach bodies and bodiless cockroach heads. Decapitating cockroaches deprives their bodies of hormones from glands in their heads that control maturation, helping researchers investigate metamorphosis and reproduction. And studies of bodiless cockroach heads shed light on how their neurons work. Plus, it provides just one more testament to the cockroach's enviable endurance.

Questions

A. Answer each of the following in 1-4 sentences of your own.

1. Skim paragraphs 2 and 3 to pick from each one biological characteristic that contributes to man's inability to survive decapitation. (Score: 01)
2. Joseph Kunkel says that cockroaches can live for weeks on a meal they had one day. Hence, what factors could lead to their death? (Score: 1.25)
3. How are the experiments on decapitated cockroaches of great scientific benefits to researchers? (Score: 1.25)
4. What does the expression "armchair exterminators" in paragraph 1 stand for? (Score:0.5)

B.

1. Explain the thematic relationship between paragraphs 8 and 10. (Score: 1.5)
2. Identify at least two different patterns used by the writer in sentence 2 of paragraph 10. Pick the transition that indicates each. (Score: 1.5)

C. Copy the following chart in your answer booklet. Skim paragraphs 4, 5 and 8 to complete the chart with relevant information, using phrases. (Score: 02)

Factors that help a decapitated cockroach survive	Effects of these factors
1.	Less blood pressure
2. Ability of neck to seal itself	
3.	No need for the brain to breathe, hence breathing doesn't stop
4. Clumps of ganglia within body segments	

D. The following statements are false because they misinterpret the writer's ideas. Rewrite them correctly. (Score: 01)

1. Cockroaches are famous for having great endurance but weak memory.
2. If given nutrients and refrigerated, a cockroach's head can stay alive for weeks.

E. Find in paragraphs 2, 7, 9, and 11 words with the following meanings. (Score: 01)

- | | |
|-------------------------|---------------------------|
| 1. hindering , blocking | 3. live , survive |
| 2. closed , shut | 4. chilling , frightening |

Part Two: Writing

(Score: 09/20)

Some scientific circles support the widespread of experimentation on animals for different purposes. However, Animal Rights Movements protest strongly against such experiments or at least ask for a more humane treatment of animals. Where do you stand? Write a 250-300-word essay of unified, coherent and properly sequenced paragraphs, arguing for or against animal experimentation. See that, in your introduction, you put your reader in the general atmosphere of your topic and clearly provide a thesis statement; and that each of your body paragraphs starts with a topic sentence which you back up with relevant supporting details. Draft, revise, and proofread your essay. Your writing will be assessed for ideas, language, style and tidiness. (Score: 05 for ideas and organization; 03 for language and style; 01 for tidiness and legible handwriting)

Part of the Q	Answer	Mark										
	Competencies: - Utilize reading strategies - Develop literal and interpretive comprehension of written discourse - Produce transactional writing											
A-1	In paragraph 2, the first biological characteristic is that in case of decapitation humans bleed and suffer from a drop in blood pressure which hinders the transport of oxygen and nutrition to vital tissues; hence, the human dies. In paragraph 3, a second biological characteristic is that because human breathing is done through the mouth and nose and is controlled by the brain, decapitation of a human would stop him from breathing, and thus he dies. A third characteristic is that the human body cannot eat without the head, so he dies from starvation if he is decapitated. N.B. One characteristic from each paragraph is enough.	01										
A-2	Decapitated cockroaches can live for weeks on a meal they had one day. In spite of this advantage, they could die if a predator eats them or if they get infected by mold or bacteria or virus.	1.25										
A-3	Experiments on decapitated cockroaches are of great scientific benefits to researchers. They help them in ①investigating metamorphose and productivity, ②discovering how cockroaches neurons work, and ③learning more about cockroaches' amazing endurance.	1.25										
A-4	"Armchair exterminators" could stand for people who kill cockroaches at their home and are eyewitnesses of what happens to a decapitated cockroach.	0.5										
B-1	The thematic relationship between paragraphs 8 and 10 is that of contrast. In paragraph 8, the writer shows that a decapitated cockroach's body can function normally without the head and the brain, while in paragraph 10, the writer says that the head and the brain of a decapitated cockroach can't function normally without the body and thus it just lasts for several hours.	1.5										
B-2	One pattern is exemplification because the writer uses "for instance". A second pattern is contrast and this is indicated by "although". A third pattern is cause / effect by using "when". N.B. Two patterns are enough.	1.5										
C	<table border="1"> <thead> <tr> <th>Factors helping a decapitated cockroach to survive</th> <th>Effects of these factors</th> </tr> </thead> <tbody> <tr> <td>1. Open circulatory system</td> <td>Less blood pressure</td> </tr> <tr> <td>2. Ability of the neck to seal itself</td> <td>Controlled bleeding</td> </tr> <tr> <td>3. Spiracles or holes on each body segment</td> <td>No need for the brain to breathe, hence breathing doesn't stop</td> </tr> <tr> <td>4. Clumps of ganglia within body segments</td> <td>Normal performance of simple nervous reactions</td> </tr> </tbody> </table> <p>N.B. 0.5 for each answer.</p>	Factors helping a decapitated cockroach to survive	Effects of these factors	1. Open circulatory system	Less blood pressure	2. Ability of the neck to seal itself	Controlled bleeding	3. Spiracles or holes on each body segment	No need for the brain to breathe, hence breathing doesn't stop	4. Clumps of ganglia within body segments	Normal performance of simple nervous reactions	02
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D-1	Cockroaches are famous for having great endurance and strong memory.	0.5
D-2	If given nutrients and refrigerated, a decapitated cockroach's head can stay alive for longer hours .	0.5
E-1	hampering (paragraph 2): hindering, blocking	0.25
E-2	sealed (paragraph 7): closed , shut	0.25
E-3	thrive (paragraph 9): live, survive	0.25
E-4	macabre (paragraph 11): chilling , frightening	0.25