IELTS Academic Reading Test 4. Section 1

READING PASSAGE 1

You should spend about 20 minutes on **Questions 1-12**, which are based on Reading Passage 1 below.

The potential to sniff out disease

The fact diseases have a smell comes as no surprise - but finding someone or something that can detect them at an early stage could hold huge potential for medicine.

Breath, bodily odours and urine are all amazingly revealing about general health. Even the humble cold can give off an odour, thanks to the thick bacteria-ridden mucus that ends up in the back of the throat. The signs are not apparent to everyone - but some super-smellers are very sensitive to the odours. Joy Milne, for example, noticed her husband's smell had changed shortly before he was diagnosed with Parkinson's disease.

Humans can detect nearly 10,000 different smells. Formed by chemicals in the air, they are absorbed by little hairs, made of extremely sensitive nerve fibres, hanging from the nose's olfactory receptors. And the human sense of smell is 10,000 times more sensitive than the sense of taste. But dogs, as the old joke might have had it, smell even better.

Their ability to detect four times as many odours as humans makes them a potential early warning system for a range of diseases. Research suggesting dogs' could sniff out cancers, for example, was first published about 10 years ago. And there have been many tales of dogs repeatedly sniffing an area of their owner's body, only for it to turn out to be hiding a tumour.

What they are smelling are the "volatile molecules" given off by cells when they become cancerous. Some studies suggest dogs can be 93% accurate. Others suggest they can detect very small tumours before clinical tests can. And yet more studies have produced mixed results.

Does cancer smell?

At Milton Keynes University Hospital, a small team has recently begun to collect human urine samples to test dogs' ability to detect the smell of prostate

cancer. The patients had symptoms such as difficulty urinating or a change in flow, which could turn out to be prostate, bladder or liver cancer.

Rowena Fletcher, head of research and development at the hospital, says the role of the dogs - which have been trained by Medical Detection Dogs - is to pick out samples that smell of cancer. Further down the line, a clinical test will show if the dogs' diagnosis is correct. She says the potential for using dogs in this way is far-reaching - even if it is not practical to have a dog in every surgery.

"We hope one day that there could be an electronic machine on every GP's desk which could test a urine sample for diseases by smelling it," she says. "But first we need to pick up the pattern of what the dogs are smelling."

And that's the key. Dogs can't tell us what their noses are detecting, but scientists believe that different cancers could produce different smells, although some might also be very similar.

Electronic noses

Lab tests to understand what these highly-trained dogs are smelling could then inform the development of 'electronic noses' to detect the same molecules. These might then give rise to better diagnostic tests in the future. The potential for using smell to test for a wide range of diseases is huge, Ms Fletcher says.

Bacteria, cancers and chronic diseases could all have their own odour - which may be imperceptible to only the most sensitive humans, but obvious to dogs. It may be possible in the future to use disease odours as the basis for a national screening programme or to test everybody at risk of a certain cancer in a particular age group.

However, there are fewer than 20 dogs in the UK trained to detect cancer at present. Training more will take more funding and time. On the positive side, all dogs are eligible to be trained provided they are keen on searching and hunting. Whatever their breed or size, it's our four-legged friend's astounding sense of smell which could unlock a whole new way of detecting human diseases.

Questions 1-5

Do the following statements agree with the information in the IELTS reading text?

In boxes **1-5** on your answer sheet, write

TRUE if the statement agrees with the information

FALSE if the statement contradicts the information

NOT GIVEN if there is no information on this

1. You can have a specific smell even due to simple cold.

2. Human sense of taste is 10,000 less sensetive than human sense of smell.

3. Dogs and cats can sniff out different diseases

4. Doctors believe that different cancers might have the same specific smell.

5. There are more than 20 dogs in the UK trained to detect cancer.

Questions 6-9

Choose the correct letter, **A, B, C** or **D.**

Write the correct letter in boxes **6-9** on your answer sheet.

6. All the studies suggest that dogs:

A. Can be 93% accurate
B. Can detect very small tumours
C. Can't detect tumours at all
D. Different studies have shown different results

7. What scientists give dogs to detect cancer?

A. Urine samples
B. Bacterias
C. Different odours
D. Nothing

8. What's an electronic nose?

A. A specific tool for dogs
B. A gadget to diagnose diseases
C. A recovery tool for ill patients
D. An artificial nose

9. The main objective of this passage is to:

A. Bring awareness to the cancer problem
B. Show us how good dogs are at detecting cancer
C. Show us how important it can be to be able to diagnose a disease by an odour
D. Tell us about new technologies

Questions 10-12

Complete the sentences below.

Write **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answers in boxes **10-12** on your answer sheet.

10. Scientists hope that one day an….. will be on every desk.

11. Electronic nose would help to detect the …...

12. Dogs can ….. a new way of diagnosing diseases.

IELTS Academic Reading Test 4. Section 2

READING PASSAGE 2

You should spend about 20 minutes on **Questions 13-26**, which are based on Reading Passage 2 below.

Trash Talk

Sorting through a mountain of pottery to track the Roman oil trade

(A) In the middle of Rome's trendiest neighborhood, surrounded by sushi restaurants and nightclubs with names like Rodeo Steakhouse and Love

Story, sits the ancient world's biggest garbage dump—a 150-foot-tall mountain of discarded Roman amphoras, the shipping drums of the ancient world. It takes about 20 minutes to walk around Monte Testaccio, from the Latin testa and Italian cocci, both meaning "potsherd." But despite its size—almost a mile in circumference—it's easy to walk by and not really notice unless you are headed for some excellent pizza at Velavevodetto, a restaurant literally stuck into the mountain's side. Most local residents don't know what's underneath the grass, dust, and scattering of trees. Monte Testaccio looks like a big hill, and in Rome people are accustomed to hills.

(B) Although a garbage dump may lack the attraction of the Forum or Colosseum, I have come to Rome to meet the team excavating Monte Testaccio and to learn how scholars are using its evidence to understand the ancient Roman economy. As the modern global economy depends on light sweet crude, so too the ancient Romans depended on oil—olive oil. And for more than 250 years, from at least the first century A.D., an enormous number of amphoras filled with olive oil came by ship from the Roman provinces into the city itself, where they were unloaded, emptied, and then taken to Monte Testaccio and thrown away. In the absence of written records or literature on the subject, studying these amphoras is the best way to answer some of the most vexing questions concerning the Roman economy—How did it operate? How much control did the emperor exert over it? Which sectors were supported by the state and which operated in a free market environment or in the private sector?

(C) Monte Testaccio stands near the Tiber River in what was ancient Rome's commercial district. Many types of imported foodstuffs, including oil, were brought into the city and then stored for later distribution in the large warehouses that lined the river. So, professor, just how many amphoras are there?" I ask José Remesal of the University of Barcelona, co-director of the Monte Testaccio excavations. It's the same question that must occur to everyone who visits the site when they realize that the crunching sounds their footfalls make are not from walking on fallen leaves, but on pieces of amphoras. (Don't worry, even the small pieces are very sturdy.) Remesal replies in his deep baritone, "Something like 25 million complete ones. Of course, it's difficult to be exact," he adds with a typical Mediterranean shrug. I, for one, find it hard to believe that the whole mountain is made of amphoras without any soil or rubble. Seeing the incredulous look on my face as I peer down into a 10-foot-deep trench, Remesal says, "Yes, it's really only amphoras." I can't imagine another site in the world where archaeologists find so much—about a ton of pottery every day. On most Mediterranean excavations, pottery washing is an activity reserved for blisteringly hot afternoons when digging is impossible. Here, it is the only activity for most of Remesal's team, an international group of specialists and students from Spain and the United States. During each year's two-week field season, they wash

and sort thousands of amphoras handles, bodies, shoulders, necks, and tops, counting and cataloguing, and always looking for stamped names, painted names, and numbers that tell each amphora's story.

(D) Although scholars worked at Monte Testaccio beginning in the late 19th century, it's only within the past 30 years that they have embraced the role amphoras can play in understanding the nature of the Roman imperial economy. According to Remesal, the main challenge archaeologists and economic historians face is the lack of "serial documentation," that is, documents for consecutive years that reflect a true chronology. This is what makes Monte Testaccio a unique record of Roman commerce and provides a vast amount of datable evidence in a clear and unambiguous sequence. "There's no other place where you can study economic history, food production and distribution, and how the state controlled the transport of a product," Remesal says. "It's really remarkable."

Questions 13-16

Reading Passage 2 has four paragraphs **A-D.** Which paragraph contains what information? Write the correct letter, **A-D**, in boxes **13-16** on your answer sheet.

13. Questions about the Roman economy

14. A unique feature

15. Description of the dump

16. Dialogue with a professor

Questions 17–21

Do the following statements agree with the information given in Reading Passage 2?

In boxes **17**–**21** on your answer sheet, write

TRUE	if the statement agrees with the information
FALSE	if the statement contradicts the information
NOT GIVEN	if there is no information on this

17. World's biggest garbage dump is surrounded by restaurants and nightclubs

18. The garbage dump is as popular as the Colosseum in Rome.

19. Ancient Roman economy depended on oil.

20. There is no information on how many amphoras are there.

21. Remesal says that Monte Testaccio is a great place to study economics

Questions 22–26

Complete the sentences below.

Write **NO MORE THAN THREE WORDS** from the passage for each answer.

Write your answers in boxes **22**–**26** on your answer sheet.

22. It is unknown for ….what's underneath the grass, dust, and scattering of trees.

23. Monte Testaccio stands near the ancient Rome's …...

24. Remesal doesn't believe that the whole mountain is made of ….. without any soil or rubble.

25. Remesal's team washes and sorts thousands of amphoras each year's two-week ….. .

26. ….started working at Monte Testaccio in the late 19th century.

IELTS Academic Reading Test 4. Section 3

This is the *final section* of **IELTS Reading practice test #4**. After you complete it, you can see your result for the full IELTS Reading test.

READING PASSAGE 3

You should spend about 20 minutes on **Questions 27-40**, which are based on Reading Passage 3 below.

Mysterious Dark Matter May Not Always Have Been Dark

Dark matter particles may have interacted extensively with normal matter long ago, when the universe was very hot, a new study suggests. The nature

of dark matter is currently one of the greatest mysteries in science. The invisible substance — which is detectable via its gravitational influence on "normal" matter - is thought to make up five-sixths of all matter in the universe.

Astronomers began suspecting the existence of dark matter when they noticed the cosmos seemed to possess more mass than stars could account for. For example, stars circle the center of the Milky Way so fast that they should overcome the gravitational pull of the galaxy's core and zoom into the intergalactic void. Most scientists think dark matter provides the gravity that helps hold these stars back. Astronomers know more about what dark matter is not than what it actually is.

Scientists have mostly ruled out all known ordinary materials as candidates for dark matter. The consensus so far is that this missing mass is made up of new species of particles that interact only very weakly with ordinary matter. One potential clue about the nature of dark matter has to do with the fact that it's five times more abundant than normal matter, researchers said.

"This may seem a lot, and it is, but if dark and ordinary matter were generated in a completely independent way, then this number is puzzling," said study co-author Pavlos Vranas, a particle physicist at Lawrence Livermore National Laboratory in Livermore, California. "Instead of five, it could have been a million or a billion. Why five?" The researchers suggest a possible solution to this puzzle: Dark matter particles once interacted often with normal matter, even though they barely do so now. "This may have happened in the early universe, when the temperature was very high — so high that both ordinary and dark matter were 'melted' in a plasma state made up of their ingredients".

The protons and neutrons making up atomic nuclei are themselves each made up of a trio of particles known as quarks. The researchers suggest dark matter is also made of a composite "stealth" particle, which is composed of a quartet of component particles and is difficult to detect (like a stealth airplane). The scientists' supercomputer simulations suggest these composite particles may have masses ranging up to more than 200 billion electron-volts, which is about 213 times a proton's mass. Quarks each possess fractional electrical charges of positive or negative one-third or two-thirds. In protons, these add up to a positive charge, while in neutrons, the result is a neutral charge. Quarks are confined within protons and neutrons by the so-called "strong interaction."

The researchers suggest that the component particles making up stealth dark matter particles each have a fractional charge of positive or negative one-half, held together by a "dark form" of the strong interaction. Stealth dark matter particles themselves would only have a neutral charge, leading them to interact very weakly at best with ordinary matter, light, electric fields and magnetic fields. The researchers suggest that at the extremely high

temperatures seen in the newborn universe, the electrically charged components of stealth dark matter particles could have interacted with ordinary matter. However, once the universe cooled, a new, powerful and as yet unknown force might have bound these component particles together tightly to form electrically neutral composites. Stealth dark matter particles should be stable — not decaying over eons, if at all, much like protons. However, the researchers suggest the components making up stealth dark matter particles can form different unstable composites that decay shortly after their creation. "For example, one could have composite particles made out of just two component particles," Vranas said.

These unstable particles might have masses of about 100 billion electron-volts or more, and could be created by particle accelerators such as the Large Hadron Collider (LHC) beneath the France-Switzerland border. They could also have an electric charge and be visible to particle detectors, Vranas said. Experiments at the LHC, or sensors designed to spot rare instances of dark matter colliding with ordinary matter, "may soon find evidence of, or rule out, this new stealth dark matter theory," Vranas said in a statement. If stealth dark matter exists, future research can investigate whether there are any effects it might have on the cosmos.

"Are there any signals in the sky that telescopes may find?" Vranas said. "In order to answer these questions, our calculations will require larger supercomputing resources. Fortunately, supercomputing development is progressing fast towards higher computational speeds." The scientists, the Lattice Strong Dynamics Collaboration, will detail their findings in an upcoming issue of the journal Physical Review Letters.

Questions 27-34

Complete the sentences below.

Write **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answers in boxes 27-34 on your answer sheet.

27. One of the greatest mysteries in science is the nature of the ….. .

28. All known material have been mostly….. as candidates for dark matter.

29. Dark matter is a lot more ….than normal matter.

30. Due to high temperature, both ordinary and dark matter were 'melted' in a …. .

31. It is confirmed that quarks are within protons and neutrons by ….. .

32. It is suggested that stealth dark matter particle would only have a …. .

33. Experiments at the LHC may soon find…. of the new stealth dark matter theory.

34. To answer questions we require ……resources .

Questions 35-39

Do the following statements agree with the information given in Reading Passage 3?

In boxes 35–39 on your answer sheet, write

TRUE if the statement agrees with the information

FALSE if the statement contradicts the information

NOT GIVEN if there is no information on this

35. The nature of dark matter is a mystery.

36. It is likely that dark matter consists of ordinary materials.

37. Quarks have neither positive nor negative charge.

38. Protons are not stable.

39. Dark matter has a serious impact on the cosmos.

Question 40

Choose the correct letter, **A, B, C** or **D.**

40. Passage 3 is:

A. a scientific article
B. a sci-fi article
C. a short sketch
D. an article from a magazine