IELTS Mock Test 2023 March

Reading Practice Test 4

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READING PASSAGE 1

You should spend about 20 minutes on ***Questions 1-13****, which are based on Reading Passage 1 below.*

The hidden lives of solitary bees

There ere 275 different species of bee in Greet Britain and Ireland. Apart from the familiar honeybee and 25 species of bumblebee, the rest are known as solitary bees

Solitary bees are unlike 'social' honeybees and bumblebees, which live in large colonies consisting of a queen whose function is to lay the eggs, while the workers gather pollen and nectar to feed the tiny grubs With solitary bees, there are typically just males and females. They mate, the mate dies and the female makes a nest.

Ian Beavis is a naturalist and blogger with a mission to raise the profile of the many solitary bees, whose pollinating services are so important, yet so little recognised, Solitary bees inhabit gardens, parks, woodlands, fields and cliffs. In fact they represent 95% of the world's bee species. Leading wildlife illustrator Richard Lewington. best known for his beautiful paintings of butterflies, says, 'Solitary bees are so useful to gardeners and commercially valuable. Yet until recently they barely registered in the public consciousness. I wanted to help publicise their vital role in our lives' The problem with solitary bees has long been one of identification - with more than 240 species to choose from, and no accessible guidebook, where do people start? So Richard Lewington has spent any spare time over the past few years working on a new guide to the bees of Great Britain and Ireland. This, amazingly, is the first book of its kind to be published for over a century.

How do solitary bees live? A female solitary bee constructs a nest and then lays her eggs in individual cells, lining or sealing them with various materials depending on the species of bee - red mason bees use mud leafcutter bees use sections of leaf The female leaves what naturalists call a 'parcel' of pollen and nectar for each other little grubs to feed on When the female has laid all her eggs, she dies The emerging grubs eat. grow and develop into adults the following year.

While some bees are plentiful and widespread, others have been designated as rare. Or are very local in distribution. In 2013. Ian Beavis came across what has long been known as one of Britain's rarest species, the banded mining bee. An impressive species with white hairs on its face, the banded mining bee nests in the ground, typically on steep banks. Ian Beavis explains that it always chooses bare earth because it doesn't like having to eat through plant roots to make its nest Females feed on a variety of plants, but seem particularly fond of yellow dandelions that bloom from spring to autumn.

Another bee that has attracted naturalists' attention is the ivy bee. It was only identified as a distinct species in 1993. It is one of a number of bees that have been able to establish themselves in Britain due to the recent warmer winters. About the same size as a with distinctive orange-yellow banding on its abdomen, it was initially thought to feed on y on ivy, but has since been seen visiting other plants.

The discoveries about ivy bees show how rewarding the study of solitary bees can be but it's not the only species whose habits are changing. Ian Beavis believes we can see in solitary bees the beginning of social behaviour. He explains that many species make their nests close to each other in huge groups, and there are some, like Andrena scotica, where several bees use the same entrance without becoming aggressive. It's not difficult to see how this behaviour, which could be seen as the foundation of social behaviour, might evolve in future into worker bees sharing care of the grubs. Indeed some of Britain's solitary bees, Lasioglossum malachurum for example, are already demonstrating this type of social behaviour. So will all solitary bees evolve into social insects? Not necessarily. According to Ian Beavis, there are advantages to social behaviour but there are also advantages to nesting alone. Bees that nest socially are a target for predators, diseases and parasites.

Pesticides can also pose a threat to solitary bees. At the University of Sussex in England. Beth Nicholls is conducting research into the effects of certain pesticides on the red mason bee. She explains. 'We know that pesticides harm social bees, but very little research has been done into solitary bees.' Honeybees fly throughout the summer, so they may be exposed to different levels of pesticides. But if the shorter flight period of solitary bees - the red mason bee only flies from March to May - coincides with peak pesticide levels, that might be disastrous. If the red mason bee declines dramatically, it could affect the fruit growing industry. According to Beth Nicholls, it is much more efficient at pollinating orchard trees. Social bees carry pollen in 'baskets' on their back legs, but a female red mason bee carries it on the underside of her abdomen. This is a messier way of transporting it, and so more pollen is transferred to other flowers. The social bees' method is much 'tidier', so once they have collected the pollen and tucked it away behind their legs, it won't be dropped.

Solitary bees are all around us. We need to start paying attention to them before it's too late.

Questions 1-4

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

Write the correct letter in boxes **28-31** *on your answer sheet.*

1 Ian Beavis and Richard Lewlngton both believe that solitary bees

- **A** are as interesting as many butterfly species.
- **B** have an extremely varied range of habitats.
- **C** should be appreciated much more widely.
- **D** are valued by many gardeners.

2 What does the writer think is surprising about the new book on bees?

- **A** There is such a wide range of species in it.
- **B** Some of the species in it are hard to differentiate.
- **C** Richard Lewington chose to give up his main work to write It.
- **D** It was so long since a guide like this had been produced.

3 Beth Nicholls explains that red mason bees

- **A** have had more studies into their behaviour than others.
- **B** may suffer more from pesticides than social bees.
- **C** have an advantage because of when they fly.
- **D** have certain similarities with honey bees.

31 Why does Beth Nicholls consider red mason bees to be valuable pollinators?

- **A** They regularly lose some of the pollen they are carrying.
- **B** They transport pollen with great care.
- **C** Their pollination season is longer than that of social bees.
- **D** The females do most of the pollen collection.

Questions 5-8

Look at the following statements (Questions **5-8**) and the list of solitary bees below.

Match each statement with the correct bee, **A-E**

Write the correct letter. **A-E**, in boxes **5-8** on your answer sheet

NB: You may use any letter **more than once.**

	List of Solitary Bees
A	The banded mining bee
B	The ivy bee
C	Andrena scotica
D	Lasrogfossum malachurum
E	The red mason bee

5 [ ] Some members of this species have started to contribute more to the care of the young

6 [ ] This species avoids areas covered with vegetation when selecting nest sites.

7 [ ] This species has a favourite flower that it feeds on,

8 [ ] This species has only been found in Britain in the past few years.

Questions 9-13

Complete the summary below.

Choose **ONE WORD ONLY** from the text for each answer

Write your answers in boxes **9-13** on your answer sheet.

The life of the solitary bee

Female solitary bees make their nests with separate 9 _____ where single eggs are deposited. Females try to ensure the survival of all their 10 _____ . They do this by providing suitable food in what is referred to as a 11 _____ . Solitary bees use a range of substances to make their nests comfortable and secure, such as plant material or 12 _____ .

Although some solitary bees are common, certain species are thought to be 13 _____

The different solitary bees vary widely in their distribution, some being found all over Britain while others are much more restricted geographically.

READING PASSAGE 2

You should spend about 20 minutes on ***Questions 14-26****, which are based on Reading Passage 2 below.*

How war debris could cause cancer

A Could the mystery over how depleted uranium might cause genetic damage be closer to being solved? It may be, if a controversial claim by two researchers is right. They say that minute quantities of the material lodged in the body may kick out energetic electrons that mimic the effect of beta radiation. This, they argue, could explain how residues of depleted uranium scattered across former war zones could be increasing the risk of cancers and other problems among soldiers and local people.

B Depleted uranium is highly valued by the military, who use it in the tips of armourpiercing weapons. The material's high density and self-sharpening properties help it to penetrate the armour of enemy tanks and bunkers. Its use in conflicts has risen sharply in recent years. The UN Environment Programme (UNEP) estimates that shells containing 1700 tonnes of the material were fired during the 2003 Iraq war. Some researchers and campaigners are convinced that depleted uranium left in the people exposed to it. Governments and the military disagree, and point out that there is no conclusive epidemiological evidence for this. And while they acknowledge that the material is weakly radioactive, they say this effect is too small to explain the genetic damage at the levels seen in war veterans and civilians.

C Organisations such as the UK's Royal Society, the US Department of Veterans Affairs and UNEP have called for more comprehensive epidemiological studies to clarify the link between depleted uranium and any ill effects. Meanwhile, various testtube and animal studies have suggested that depleted uranium may increase the risk of cancer, according to a review of the scientific literature published in May 2008 by the US National Research Council. The authors of the NRC report argue that more long-term and quantitative research is needed on the effects of uranium's chemical toxicity. They say the science seems to support the theory that genetic damage might be occurring because uranium's chemical toxicity and weak radioactivity could somehow reinforce each other, though no one knows what the mechanism for this might be.

D Now two researchers, Chris Busby and Ewald Schnug, have a new theory that they say explains how depleted uranium could cause genetic damage. Their theory invokes a well-known process called the photoelectric effect. This is the main mechanism by which gamma photons with energies of about 100 kiloelectronvolts (keV) or less are blocked by matter: the photon transfers its energy to an electron in the atom's electron cloud, which is ejected into the surroundings.

An atom's ability to stop photons by this mechanism depends on the fourth power of its atomic number - the number of protons in its nucleus - so heavy elements are far better at intercepting gamma radiation and X-rays than light elements. This means that uranium could be especially effective at capturing photons and kicking out damaging photoelectrons: with an atomic number of 92, uranium blocks low-energy gamma photons over 450 times as effectively as the lighter element calcium, for instance.

E Busby and Schnug say that previous risk models have ignored this well-established physical effect. They claim that depleted uranium could be kicking out photoelectrons in the body's most vulnerable spots. Various studies have shown that dissolved uranium - ingested in food or water, for example - is liable to attach to DNA strands within cells, because uranium binds strongly to DNA phosphate. "Photoelectrons from uranium are therefore likely to be emitted precisely where they will cause most damage to genetic material," says Busby.

Busby and Schnug base their claim on calculations of the photoelectrons that would be produced by the interation between normal background levels of gamma radiation and uranium in the body. "Our detailed calculations indicate that the phantom photoelectrons are the predominant effect by far for uranium genome toxicity, and that uranium could be 1500 times as powerful as an emitter of photoelectrons than as an alpha emitter." Their computer modelling results are described in a peer-reviewed paper to be published in this month by the IPNSS in a book called Loads and Fate of Fertiliser Derived Uranium.

G Hans-Georg Menzel, who chairs the International Commission on Radiological Protection's committee on radiation doses, acknowledges that the theory should be considered, but he doubts that it will prove significant. He suspects that under normal background radiation the effect is too weak to inflict many of the "double hits" of energy that are known to be most damaging to cells. "It is very unlikely that individual cells would be subject to two or more closely spaced photoelectron impacts under normal background gamma irradiation," he says. Despite his doubts, Menzel raised the issue last week with his committee in St Petersburg, Russia, and says that several colleagues "intended to collect relevant data and perform calculations to check whether there was any possibility of a real effect in living tissues". Organisations in the UK, including the Ministry of Defence and the Health Protection Agency, say they have no plans to investigate Busby's hypothesis.

H Radiation biophysicist Mark Hill of the University of Oxford would like to see a fuller

investigation, though he suggests this might show that the photoelectric effect is not as powerful as Busby claims. “We really need more detailed calculations and dose estimates for realistic situations with and without uranium present,” he says. Hill’s doubts centre on an effect called Compton scattering, which he believes needs to be factored into any calculations. With Compton scattering, uranium is only 4.5 times as effective as calcium at stopping gamma photons, so Hill says that taking it into account would reduce the relative importance of uranium as an emitter of secondary electrons. If he is right, this would dilute the mechanism proposed by Busby and Schnug.

I The arguments over depleted uranium are likely to continue, whatever the outcome of these experiments. Whether Busby’s theory holds up or not remains to be seen, but investigating it can only help to clear up some of the doubts about this mysterious substance.

Questions 14-18

The reading Passage has nine paragraphs **A-I.**

Which paragraph contains the following information?

Write the correct letter **A-I**, in boxes **14-18** on your answer sheet.

NB you may use any **letter more than once**

14 [ ] a famous process is given relating to the new theory.

15 [ ] a person who acknowledges but suspects the theory.

16 [ ] the explanation of damage to DNA.

17 [ ] a debatable and short explanation of the way creating the problems of soldiers.

18 [ ] Busby’s hypothesis is not in the investigation plans of organizations.

Questions 19-22

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

In boxes **19-22** 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

19 [ ] All people believe that depleted uranium is harmful to people's health.

20 [ ] Heavier elements can perform better at preventing X-rays and gamma radiation.

21 [ ] By particular calculations, it is known that the main effect of uranium genome toxicity is phantom photoelectrons.

22 [ ] Most scientists support Mark Hill's opinion.

Questions 23-26

Complete the following summary of the paragraphs of Reading Passage using no more than two words from the Reading Passage for each answer.

Write your answers in boxes **23-26** on your answer sheet.

23 _____ attaches importance to depleted uranium due to its 24 _____ and 25 _____ features, which are helpful in the war. However, it has ill effects in people, and then causes organisations' appeal to do more relative studies. According to some scientists, we should do research about the impact of uranium's 26 _____ which may be enhanced with weak radioactivity.

READING PASSAGE 3

You should spend about 20 minutes on ***Questions 27-30****, which are based on Reading Passage 3 below.*

The Discovery of Uranus

Someone once put forward an attractive though unlikely theory. Throughout the Earth's annual revolution around the sun, there is one point of space always hidden from our eyes. This point is the opposite part of the Earth's orbit, which is always hidden by the sun. Could there be another planet there, essentially similar to our own, but always invisible?

If a space probe today sent back evidence that such a world existed it would cause not much more sensation than Sir William Herschel's discovery of a new planet, Uranus, in 1781. Herschel was an extraordinary man — no other astronomer has ever covered so vast a field of work — and his career deserves study. He was born in Hanover in Germany in 1738, left the German army in 1757, and arrived in England the same year with no money but quite exceptional music ability. He played the violin and oboe and at one time was organist in the Octagon Chapel in the city of Bath. Herschel's was an active mind, and deep inside he was conscious that music was not his destiny; he therefore, read widely in science and the arts, but not until 1772 did he come across a book on astronomy. He was then 34, middle-aged by the standards of the time, but without hesitation he embarked on his new career, financing it by his professional work as a musician. He spent years mastering the art of telescope construction, and even by present-day standards his instruments are comparable with the best.

Serious observation began 1774. He set himself the astonishing task of 'reviewing the heavens', in other words, pointing his telescope to every accessible part of the sky and recording what he saw. The first review was made in 1775; the second, and most momentous, in 1780-81. It was during the latter part of this that he discovered Uranus. Afterwards, supported by the royal grant in recognition of his work, he was able to devote himself entirely to astronomy. His final achievements spread from the sun and moon to remote galaxies (of which he discovered hundreds), and papers flooded from his pen until his death in 1822. Among these, there was one sent to the Royal Society in 1781, entitled An Account of a

Comet. In his own words:

On Tuesday the 13th of March, between ten and eleven in the evening, while I was examining the small stars in the neighbourhood of H Geminorum, I perceived one that appeared visibly larger than the rest; being struck with its uncommon magnitude, I compared it to H Geminorum and the small star in the quartile between Auriga and Gemini, and finding it to be much larger than either of them, suspected it to be a comet.

Herschel's care was the hallmark of a great observer; he was not prepared to jump any conclusions. Also, to be fair, the discovery of a new planet was the last thought in anybody's mind. But further observation by other astronomers besides Herschel revealed two curious facts. For the comet, it showed a remarkably sharp disc; furthermore, it was moving so slowly that it was thought to be a great distance from the sun, and comets are only normally visible in the immediate vicinity of the sun. As its orbit came to be worked out the truth dawned that it was a new planet far beyond Saturn's realm, and that the 'reviewer of the heavens' had stumbled across an unprecedented prize. Herschel wanted to call it georgium sidus (Star of George) in honour of his royal patron King George III of Great Britain. The planet was later for a time called Herschel in honour of its discoverer. The name Uranus, which was first proposed by the German astronomer Johann Elert Bode, was in use by the late 19th century.

Uranus is a giant in construction, but not so much in size; its diameter compares unfavourably with that of Jupiter and Saturn, though on the terrestrial scale it is still colossal. Uranus' atmosphere consists largely of hydrogen and helium, with a trace of methane. Through a telescope the planet appears as a small bluish-green disc with a faint green periphery. In 1977, while recording the occultation 1 of a star behind the planet, the American astronomer James L. Elliot discovered the presence of five rings encircling the equator of Uranus. Four more rings were discovered in January 1986 during the exploratory flight of Voyager 2 2 , In addition to its rings, Uranus has 15 satellites ('moons'), the last 10 discovered by Voyager 2 on the same flight; all revolve about its equator and move with the planet in an east—west direction. The two largest moons, Titania and Oberon, were discovered by Herschel in 1787. The next two, Umbriel and Ariel, were found in 1851 by the British astronomer William Lassell. Miranda, thought before 1986 to be the innermost moon, was discovered in 1948 by the American astronomer Gerard Peter Kuiper.

Glossary:
'O**ccultation**' : *in astronomy, when one object passes in front of another and hides the second from view, especially, for example, when the moon comes between an observer and a star or planet* .
'**Voyager 2**' : *an unmanned spacecraft sent on a voyage past Saturn, Uranus and Jupiter in 1986; during which it sent back information about these planets to scientists on earth* .

Questions 27-31

Complete the table below. Write a date for each answer.

Write your answers in boxes **27-31** on your answer sheet.

Event	Date
Example William Herschel was born	*Answer* 1738
Herschel began investigating astronomy	27 _____
Discovery of the planet Uranus	28 _____
Discovery of the moons Titania and Oberon	29 _____
First discovery of Uranus' rings	30 _____
Discovery of the last 10 moons of Uranus	31 _____

Questions 32-36

Do the following statements reflect the claims of the writer of the Reading Passage?

In boxes **32-36** on your answer sheet write

YES	if the statement agrees with the views of the writer
NO	if the statement contradicts the views of the writer
NOT GIVEN	if it is impossible to say what the writer thinks about this

Example Answer
Herschel was multi-talented **YES**

32 [ ] It is improbable that there is a planet hidden behind the sun.

33 [ ] Herschel knew immediately that he had found a new planet.

34 [ ] Herschel collaborated with other astronomers of his time.

35 [ ] Herschel's newly-discovered object was considered to be too far from the sun to be a comet.

36 [ ] Herschel's discovery was the most important find of the last three hundred years.

Questions 37-40

Complete each of the following statements (Questions **37-40**) with a name from the Reading Passage.
Write your answers in boxes **37-40** on your answer sheet.

The suggested names of the new planet started with 37 _____ , then 38 _____ , before finally settling on Uranus. The first five rings around Uranus were discovered by 39 _____ . From 1948 until 1986, the moon 40 _____ was believed to be the moon closest to the surface of Uranus.

Solution:

Part 1: Question 1 - 31

1. C
2. D
3. B
31. 1986
5. D
6. A
7. A
8. B
9. cells
10. grubs
11. parcel
12. mud
13. rare

Part 2: Question 14 - 26

14. D
15. G
16. E
17. A
18. G
19. FALSE
20. TRUE
21. TRUE
22. NOT GIVEN
23. the military

24 high density

25 self-sharpening

26 chemical toxicity

Part 3: Question 27 - 40

27 1772

28 1781

29 1787

30 1977

31 1986

32 YES

33 NO

34 NOT GIVEN

35 YES

36 NOT GIVEN

37 georgium sidus

38 Herschel

39 James L. Elliot

40 Miranda