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

# THE TREASURE HUNTERS

*The contribution made to the preservation of Britain's heritage by 'detectorists' – amateur archaeologists who walk fields with metal detectors*

1 On a raw November morning, Cliff Bradshaw was working a potato field in Kent with his metal detector when he heard a faint, high-pitched whine through his earphones. 'It was the tiniest possible signal,' he says. 'I knew it couldn't be iron because the machine would have made a growling noise. I scuffed the ground with my foot and tried again. The sound became more and more high-pitched as I dug down until it was shrieking in my earphones.'

2 Three weeks earlier he had found a rare seventh century gold coin on the same site, then four spindle whorls, followed by a silver strap-end from a Saxon belt and a gilded Saxon button-brooch. Yet he felt this was going to be different. More than a foot below the surface, he saw the gleam of what could only be gold. Buried silver goes grey, bronze goes green and iron turns rusty, but gold comes out of the ground as brilliant as the day it went in. As a symbol of permanence, there's nothing like it. That is its magic – for the metalworker, for the collector, for kings, for lovers, for treasure-hunters.

3 Bradshaw threw his excavating spade to one side and scraped with his hands until he had exposed the whole object. It was a corrugated cup made of sheet gold, savagely crushed on one side where it had been struck by a subsoiling machine, but still beautiful. There were tiny dots all around the rim and it had a broad, decorated handle secured with lozenge-shaped washers. Because of its round base, in its crumpled state it looked like a misshapen heart.

4 'I knew it was gold. I knew it was old. But there was no real jump for joy,' says Bradshaw. 'I never sell my stuff and I honestly didn't think about the money. I was just shocked. The real excitement for me was finding the prehistoric barrow where I was detecting – just a foot or so of raised earth that was once as high as a house. It was difficult to see. No one had noticed it before.'

5 As he drove home with the cup, Bradshaw had a feeling that he had seen an object like it in one of his archaeological books. He found what he was looking for; his cup was so similar to the gold Rillington Cup, found in Cornwall in 1837 by a tin worker, that it might almost have been made by the same man. 'Bronze Age. Wow! It was like the find of three lifetimes. What I felt was wonderment more than excitement.'

6 He reported his find to an archaeologist, Keith Parfitt, who had good relations with local metal detectorists. Bradshaw's discovery is now famed as the Ringlemere Cup, only the second example in Britain of an Early Bronze Age gold cup. It dates from between 1700 and 1500 BC. Because the cup was more than 300 years old and made of more than 10% gold, it qualified as treasure under the 1996 Treasure Act, and a reward of £270,000 reflecting its value was divided equally between Bradshaw and the farmer whose land he had been exploring. Professional excavations, with Bradshaw as part of the team, will continue on the site for many years, yielding up more artefacts; more information about society in prehistoric Britain. 'It's being called a ritual landscape,' he says. 'The floor our ancestors walked on. You can't put a value on that, can you?'

7 This is how archaeologists and museum curators would like every story of amateur

treasure finds to end. But they don't. An astonishing 90 per cent of all 'treasure' in Britain is uncovered by 'detectorists', as they like to be known, sweeping the fields and hedgerows with metal detectors. The hobby took off in the 1970s and is now practised by some 30,000 enthusiasts, often in wretched wintry conditions when agricultural land is fallow. Most of them do it because, like Bradshaw, they love the sense of 'being in touch with the past' and have become knowledgeable spare-time archaeologists in their own right. But a few are blatantly in it for the money and some sites have been wrecked beyond recovery by their depredations. Without an accurate 'findspot', an exact provenance, all treasure is devalued and archaeology loses the vital context it needs for an object to have real meaning.

8 Relations between the professionals and the amateurs have often been hostile, archaeologists regarding nasty metal detectorists as ignorant plunderers and detectorists resenting snooty archaeologists as high-handed and obstructive. Helped by the Act, which encourages people to declare their finds by offering a reward determined by a panel of experts, and by the contribution metal detecting obviously makes to our heritage, the two groups have reached a state of respectful co-operation. Richard Hobbs, the British Museum's expert in prehistory and early Europe, says it all comes down to individuals. Some report everything, some will be tempted to slip a gold coin into their boot. There are plenty of discreet outlets for stolen antiquities. 'Some countries have a complete ban on metal detectorists or treat them harshly,' he says. 'But we are all after the same thing. These objects don't belong to any of us. Hopefully, we are all rowing in the same direction.'

9 This certainly wasn't true in the 1980s in Wanborough, Surrey, where the site of a Romano-Celtic temple was plundered by detectorist 'nighthawks' from all over the country. The looting and wrecking of Wanborough was a turning point. It worsened relationships between amateurs and professionals – but it helped push through the new treasure legislation of 1996.

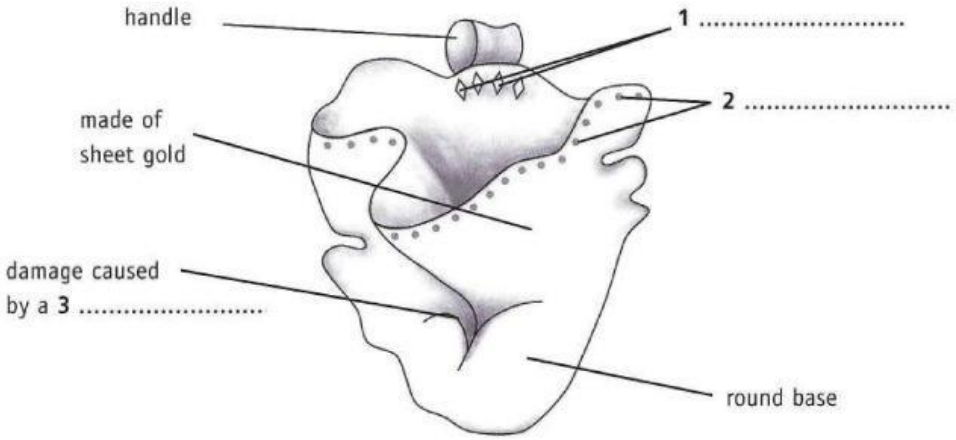


***Questions 1–3***

*Label the diagram below.*

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

**CLIFF BRADSHAW'S FIND**



***Questions 4–10***

*Complete the flow chart below.*

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

## The events of Cliff Bradshaw's find

Cup is found using a metal detector and an **4** ....., where Cliff Bradshaw was detecting in a **5** ..... .

↓

Bradshaw notes that it resembles a cup that was discovered by **6** ..... in 1837.

↓

Bradshaw informs a local archaeologist of his find.

↓

Bradshaw's find is named **7** ..... .

↓

Because of its age and content the cup is legally declared to be **8** ..... .

↓

Bradshaw shares the reward with **9** ..... .

↓

Professional excavations continue on the site.

↓

The site is now regarded as a **10** ..... .

***Questions 11–13***

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

**11** What is said about detectorists in the seventh paragraph?

- **A** Most of them are not serious about the hobby.
- **B** Some of them have caused serious damage.
- **C** Some of them think that the name is inappropriate.
- **D** Most of them do research before taking up the hobby.

**12** What is said about relations between archaeologists and detectorists?

- **A** Mutual tolerance now exists between the two groups.
- **B** Relations have changed because the two groups have been forced to work together more closely.
- **C** There is still some ill feeling between the two groups.
- **D** Archaeologists began the process of improving the relationship between the two groups.

**13** Which of the following does Richard Hobbs believe?

- **A** Attitudes towards detectorists are changing everywhere.
- **B** Competition between detectorists can cause problems.
- **C** Laws against detectorists tend to be ineffective.
- **D** There may still be some dishonest detectorists.

## READING PASSAGE 2

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

# Athletes and stress

**A** It isn't easy being a professional athlete. Not only are the physical demands greater than most people could handle, athletes also face intense psychological pressure during competition. This is something that British tennis player Emma Raducanu wrote about on social media following her withdrawal from the 2021 Wimbledon tournament. Though the young player had been doing well in the tournament, she began having difficulty regulating her breathing and heart rate during a match, which she later attributed to 'the accumulation of the excitement and the buzz'.

**B** For athletes, some level of performance stress is almost unavoidable. But there are many different factors that dictate just how people's minds and bodies respond to stressful events. Typically, stress is the result of an exchange between two factors: demands and resources. An athlete may feel stressed about an event if they feel the demands on them are greater than they can handle. These demands include the high level of physical and mental effort required to succeed, and also the athlete's concerns about the difficulty of the event, their chance of succeeding, and any potential dangers such as injury. Resources, on the other hand, are a person's ability to cope with these demands. These include factors such as the competitor's degree of confidence, how much they believe they can control the situation's outcome, and whether they're looking forward to the event or not.

**C** Each new demand or change in circumstances affects whether a person responds positively or negatively to stress. Typically, the more resources a person feels they have in handling the situation, the more positive their stress response. This positive stress response is called a challenge state. But should the person feel there are too many demands placed on them, the more likely they are to experience a negative stress response – known as a threat state. Research shows that the challenge states lead to good performance, while threat states lead to poorer performance. So, in Emma Raducanu's case, a much larger audience, higher expectations and facing a more skilful opponent, may all have led her to feel there were greater demands being placed on her at Wimbledon – but she didn't have the resources to tackle them. This led to her experiencing a threat response.

**D** Our challenge and threat responses essentially influence how our body responds to stressful situations, as both affect the production of adrenaline and cortisol – also known as 'stress hormones'. During a challenge state, adrenaline increases the amount of blood pumped from the heart and expands the blood vessels, which allows more energy to be delivered to the muscles and brain. This increase of blood and decrease of pressure in the blood vessels has been consistently related to superior sport performance in everything from cricket batting, to golf putting and

football penalty taking. But during a threat state, cortisol inhibits the positive effect of adrenaline, resulting in tighter blood vessels, higher blood pressure, slower psychological responses, and a faster heart rate. In short, a threat state makes people more anxious – they make worse decisions and perform more poorly. In tennis players, cortisol has been associated with more unsuccessful serves and greater anxiety.

**E** That said, anxiety is also a common experience for athletes when they're under pressure. Anxiety can increase heart rate and perspiration, cause heart palpitations, muscle tremors and shortness of breath, as well as headaches, nausea, stomach pain, weakness and a desire to escape in more extreme cases. Anxiety can also reduce concentration and self-control and cause overthinking. The intensity with which a person experiences anxiety depends on the demands and resources they have. Anxiety may also manifest itself in the form of excitement or nervousness depending on the stress response. Negative stress responses can be damaging to both physical and mental health – and repeated episodes of anxiety coupled with negative responses can increase risk of heart disease and depression.

**F** But there are many ways athletes can ensure they respond positively under pressure. Positive stress responses can be promoted through the language that they and others – such as coaches or parents – use. Psychologists can also help athletes change how they see their physiological responses – such as helping them see a higher heart rate as excitement, rather than nerves. Developing psychological skills, such as visualisation, can also help decrease physiological responses to threat. Visualisation may involve the athlete recreating a mental picture of a time when they performed well, or picturing themselves doing well in the future. This can help create a feeling of control over the stressful event. Recreating competitive pressure during training can also help athletes learn how to deal with stress. An example of this might be scoring athletes against their peers to create a sense of competition. This would increase the demands which players experience compared to a normal training session, while still allowing them to practise coping with stress.

*Questions 14–18*

Reading Passage 2 has six paragraphs, **A–F**.

Which paragraph contains the following information?

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

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

**14** reference to two chemical compounds which impact on performance

**15** examples of strategies for minimising the effects of stress

**16** how a sportsperson accounted for their own experience of stress

**17** study results indicating links between stress responses and performance

**18** mention of people who can influence how athletes perceive their stress responses

*Questions 19–22*

*Complete the sentences below.*

*Choose **ONE WORD ONLY** from the passage for each answer.*

*Write your answers in boxes 19–22 on your answer sheet.*

**19** Performance stress involves many demands on the athlete, for example, coping with the possible risk of ..... .

**20** Cortisol can cause tennis players to produce fewer good ..... .

**21** Psychologists can help athletes to view their physiological responses as the effect of a positive feeling such as ..... .

**22** ..... is an example of a psychological technique which can reduce an athlete's stress responses.

*Questions 23 and 24*

*Choose **TWO** letters, **A–E**.*

*Write the correct letters in boxes 23 and 24 on your answer sheet.*

Which **TWO** facts about Emma Raducanu's withdrawal from the Wimbledon tournament are mentioned in the text?

**A** the stage at which she dropped out of the tournament
**B** symptoms of her performance stress at the tournament
**C** measures which she had taken to manage her stress levels
**D** aspects of the Wimbledon tournament which increased her stress levels
**E** reactions to her social media posts about her experience at Wimbledon

*Questions 25 and 26*

*Choose **TWO** letters, **A–E**.*

*Write the correct letters in boxes 25 and 26 on your answer sheet.*

Which **TWO** facts about anxiety are mentioned in Paragraph E of the text?

**A** the factors which determine how severe it may be
**B** how long it takes for its effects to become apparent
**C** which of its symptoms is most frequently encountered
**D** the types of athletes who are most likely to suffer from it
**E** the harm that can result if athletes experience it too often

*You should spend about 20 minutes on* ***Questions 27–40,*** *which are based on Reading Passage 3 on pages 104 and 105.*

# MISSION OUT OF CONTROL

*It's not just physical dangers astronauts have to contend with – psychological friction is a big problem, says Raj Persaud*

On space missions, weightlessness and radiation are often seen as being the key dangers. But there is increasing evidence to show that one of the greatest hazards lies in the crew itself. The hostile space environments and the hardware are, of course, crucial factors in any space mission. But so is the software of the human brain.

During long missions, space travellers have shown signs of increased territoriality, withdrawal and need for privacy. As a result of these sorts of psychological difficulties, one cosmonaut had a religious experience that led him to make a dangerous, unauthorised spacewalk. Nasa's Skylab missions in 1973 and 1974 almost immediately ran into trouble. One astronaut erroneously changed the control systems while suffering from psychological problems. Crew members began the third mission with a schedule that was too strenuous. They fell behind in their work and became demoralised. On their 45th day in space, the crew went on strike, refusing to perform scheduled tasks. Disregarding orders was an unusual and dangerous response for astronauts. After concessions from mission control, the crew settled down and eventually completed an 84-day mission.

The Russians have identified three phases in adaptation to space. The first lasts up to two months and is dominated by adjustments to the new environment. This is followed by increasing fatigue and decreasing motivation,'asthenia'. What once seemed exciting becomes boring and repetitious. Next comes a lengthy period during which the asthenia, which can include depression and anxiety, worsens. The spacefarers are unusually upset by loud noises or unexpected information. This is the period when crew members get testy with one another and with the ground crew. There have been reports describing how one crew member did not speak to another for days; there are even rumours of fist fights – one over a chess game. Tensions frequently spill over to mission control, as they did in the Skylab strike. One Russian crew aboard a Salyut space station reportedly got so cross with mission control that they shut down communications for 24 hours.

According to Henry Cooper, who wrote a book, *A House in Space*, on the loneliness of the long-distance astronaut, at least three missions have been aborted for reasons that were in part psychological. In the 1976 Soyuz-21 mission to the Salyut-5 space station, the crew was brought home early after the cosmonauts complained fiercely of an acrid odour in the space station's environmental control system. No cause

was ever found, nor did other crews smell it; conceivably, it was a hallucination. Coincidentally, the crew had not been getting along. The crew of the Soyuz T-14 mission to Salyut-7 in 1985 was brought home after 65 days after Vladimir Vasyutin complained that he had a prostate infection. Later, the doctors believed that the problem was partly psychological. Vasyutin had been getting behind in his work and was under pressure, having been passed over for a flight several times before. Alexander Laveikin returned early from the Soyuz TM-2 mission to the Mir space station in 1987 because he complained of a cardiac irregularity. Flight surgeons could find no sign of it. The cosmonaut had been under stress – he had made a couple of potentially serious errors. And he had not been getting along with his partner, Yuri Romanenko.

The same psychological phenomena curse men and women on expeditions to remote places. Isolation and sensory deprivation are the common denominators, whether the mission is in the Arctic wastes or the realm of the deep, causing a series of symptoms – heightened anxiety, boredom, depression, loneliness, excessive fear of danger and homesickness. The scientists and support staff who work in Antarctica have been studied by Dr Joanna Wood of the National Space Biomedical Research Institute in Houston, who also studies how crews behave in a special test chamber. 'After a few months, you get tired of looking at the same faces. People frequently have behaviours that might be endearing in the larger society, but when you're living with it day after day it's an annoyance.'

This continent, the last to be explored by humans, is the coldest, windiest and driest land mass. Because of the extreme environment, researchers must 'winter over' for six months out of the year. During this period, there is little contact with the outside world and groups tend to be confined indoors by the extreme temperatures. Antarctica has served as one of the primary means of gathering psychosocial data for space missions, according to Dr John Annexstad, a space scientist and ten-time veteran of scientific missions to Antarctica.

During the first few months of an Antarctic mission, interpersonal problems don't play a major part. The problem arises, says Dr Annexstad, after the initial shock and awe of the environment wear off, and crew members get to know their surroundings a little better. Then they begin to rebel against authority and each other. In one ice base, anxiety episodes increased from 3 during the first four months to 19 during the last four. In a study of personnel who wintered over in the Antarctic, 85 per cent reported periods of significant depression, 65 per cent had periods of anger or hostility, 60 per cent suffered from sleep disturbance, and 53 per cent had impaired cognition. During the 1977 International Biomedical Expedition to Antarctica, a 12-man adventure lasting 72 days, bickering became such a problem that psychologists accompanying the expedition had to intervene. Antarctic literature is full of stories about teammates who stopped talking to one another or even fought – one concerns a cook with a meat cleaver facing off against an engineer brandishing a fire axe.

***Questions 27–29***

*Complete the sentences below with words taken from Reading Passage 3.*
*Use **NO MORE THAN THREE WORDS** for each answer.*
*Write your answers in boxes 27–29 on your answer sheet.*

**27** Space travellers on long missions demonstrate the desire to have some ..... .
**28** Astronauts can get into a state called ..... after two months in space.
**29** The causes of psychological problems on both space missions and expeditions to remote places are ..... together with ..... .

***Questions 30–35***

*Look at the statements (**Questions 30–35**) and the list of space missions below. Match each statement with the space mission it refers to.*
*Write the correct letter **A–D** in boxes 30–35 on your answer sheet.*
***NB*** You may use any letter more than once.

**30** Two of the astronauts had a bad relationship with each other.
**31** The astronauts decided not to carry out their duties.
**32** One of the astronauts did not complete the mission.
**33** One of the astronauts had failed to be selected for previous missions.
**34** One of the astronauts made a mistake with the equipment.
**35** The astronauts perceived something that may not have existed.

**List of Space Missions**

**A** Skylab
**B** Soyuz-21
**C** Soyuz T-14
**D** Soyuz TM-2

***Questions 36–40***

*Complete the summary below using words from the box.*
*Write your answers in boxes 36–40 on your answer sheet.*

## Antarctic missions

According to Dr John Annexstad, relationships are not an important factor during the first part of a mission because crew members lack **36** ..... with their environment and have a feeling of **37** ..... . After this, there is less **38** ..... from crew members and the number of events caused by **39** ..... increases enormously as the mission continues. According to some stories, relationships can even result in **40** ..... involving crew members.

| | | | |
|---|---|---|---|
| expectation | boredom | cooperation | improvement |
| sympathy | discussion | familiarity | error |
| determination | carelessness | disappointment | violence |
| amazement | involvement | misunderstanding | confidence |
| failure | tension | competition | envy |