IELTS
READING TEST

READING PASSAGE 1

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

The nature and aims of archaeology

Archaeology is partly the discovery of the treasures of the past, partly the careful work of the scientific analyst, partly the exercise of the creative imagination. It is toiling in the sun on an excavation in the Middle East, it is working with living Inuit in the snows of Alaska, and it is investigating the sewers of Roman Britain. But it is also the painstaking task of interpretation, so that we come to understand what these things mean for the human story. And it is the conservation of the world's cultural heritage against looting and careless harm.

Archaeology, then, is both a physical activity out in the field, and an intellectual pursuit in the study or laboratory. That is part of its great attraction. The rich mixture of danger and detective work has also made it the perfect vehicle for fiction writers and film-makers, from Agatha Christie with Murder in Mesopotamia to Stephen Spielberg with Indiana Jones. However far from reality such portrayals are, they capture the essential truth that archaeology is an exciting quest - the quest for knowledge about ourselves and our past.

But how does archaeology relate to disciplines such as anthropology and history, that are also concerned with the human story? Is archaeology itself a science? And what are the responsibilities of the archaeologist in today's world?

Anthropology, at its broadest, is the study of humanity - our physical characteristics as animals and our unique non-biological characteristics that we call culture. Culture in this sense includes what the anthropologist, Edward Tylor, summarised in 1871 as 'knowledge, belief, art, morals, custom and any other capabilities and habits acquired by man as a member of society'. Anthropologists also use the term 'culture' in a more restricted sense when they refer to the 'culture1 of a particular society, meaning the non-biological characteristics unique to that society, which distinguish it from other societies. Anthropology is thus a broad discipline - so broad that it is generally broken down into three smaller disciplines: physical anthropology, cultural anthropology and archaeology.

Physical anthropology, or biological anthropology as it is also called, concerns the study of human biological or physical characteristics and how they evolved. Cultural anthropology - or social anthropology - analyses human culture and society. Two of its branches are ethnography (the study at first hand of individual living cultures) and ethnology (which sets out to .compare cultures using ethnographic evidence to derive general principles about human society).

Archaeology is the 'past tense of cultural anthropology'. Whereas cultural anthropologists will often base their conclusions on the experience of living within contemporaly communities, archaeologists study past societies primarily through their material remains - the buildings, tools, and other artefacts that constitute what is known as the material culture left over from former societies.

Nevertheless, one of the most important tasks for the archaeologist today is to know how to interpret material culture in human terms. How were those pots used? Why are some dwellings round and others square? Here the methods of archaeology and ethnography overlap. Archaeologists in recent decades have developed 'ethnoarchaeology', where, like ethnographers, they live among contemporary communities, but with the specific purpose of learning how such societies use material culture - how they make their tools and weapons, why they build their settlements where they do, and so on. Moreover, archaeology has an active role to play in the field of conservation. Heritage studies constitutes a developing field, where it is realised that the world's cultural heritage is a diminishing resource which holds different meanings for different people.

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If, then, archaeology deals with the past, in what way does it differ from history? In the broadest sense, just as archaeology is an aspect of anthropology, so too is it a part of history - where we mean the whole history of humankind from its beginnings over three million years ago. Indeed, for more than ninety-nine per cent of that huge span of time, archaeology - the study of past material culture - is the only significant source of information. Conventional historical sources begin only with the introduction of written records around 3,000 BC in western Asia, and much later in most other parts of the world.

A commonly drawn distinction is between pre-history, i.e. the period before written records - and history in the narrow sense, meaning the study of the past using written evidence. To archaeology, which studies all cultures and periods, whether with or without writing, the distinction between history and pre-history is a convenient dividing line that recognises the importance of the written word, but in no way lessens the importance of the useful information contained in oral histories.

Since the aim of archaeology is the understanding of humankind, it is a humanistic study, and since it deals with the human past, it is a historical discipline. But it differs from the study of written history in a fundamental way. The material the archaeologist finds does not tell us directly what to think. Historical records make statements, offer opinions and pass judgements. The objects the archaeologists discover, on the other hand, tell us nothing directly in themselves. In this respect, the practice of the archaeologist is rather like that of the scientist, who collects data, conducts experiments, formulates a hypothesis, tests the hypothesis against more data, and then, in conclusion, devises a model that seems best to summarise the pattern observed in the data. The archaeologist has to develop a picture of the past, just as the scientist has to develop a coherent view of the natural world.

Questions 1-6

Do the following Statements agree with the claims of the writer in Reading Passage?

*In boxes **1-6** on your answer sheet write*

YES if the statement agrees with the claims of the writer

NO if the statement contradicts the claims of the writer

NOT GIVEN if it is impossible to say what the writer thinks about this

1 Archaeology involves creativity as well as careful investigative work.

2 Archaeologists must be able to translate texts from ancient languages.

3 Movies give a realistic picture of the work of archaeologists.

4 Anthropologists define culture in more than one way.

5 Archaeology is a more demanding field of study than anthropology.

6 The history of Europe has been documented since 3,000 BC.

Questions 7-8

Choose **TWO** letters **A-E.**

Write your answers in boxes **7-8** on your answer sheet.

The list below gives some statements about anthropology.

Which **TWO** statements are mentioned by the writer of the text?

A It is important for government planners.

B It is a continually growing field of study.

C It often involves long periods of fieldwork.

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D It is subdivided for study purposes.

E It studies human evolutionary patterns.

Questions 9-10

Choose **TWO** *letters* **A-E.**

Write your answers in boxes **9-10** *on your answer sheet.*

The list below gives some of the tasks of an archaeologist.

Which **TWO** *of these tasks are mentioned by the writer of the text?*

A examining ancient waste sites to investigate diet

B studying cave art to determine its significance

C deducing reasons for the shape of domestic buildings

D investigating the way different cultures make and use objects

E examining evidence for past climate changes

Questions 11-13

Complete the summary of the last two paragraphs of Reading Passage.

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

Write your answers in boxes ***11-14*** *on your answer sheet.*

Much of the work of archaeologists can be done using written records but they find **11……..** equally valuable. The writer describes archaeology as both a **12 ……..** and a **13 ……..**. However, as archaeologists do not try to influence human behaviour, the writer compares their style of working to that of a scientist.

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READING PASSAGE 2

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

The Business of Space

Up until very recently space travel and exploration were solely the preserve of governments, most notably the Russian and American. However, with the decline of government wealth and the dramatic increase in personal wealth, the whole landscape of space travel is changing.

The first tentative steps into the commercialisation of personal space travel began when billionaire Dennis Tito paid $20 million to ride on a Russian Soyuz spacecraft for a week's holiday on a space station. Since then, there have been seven space tourists who have paid large sums of money for a space experience. Yet, collectively, their financial contribution is minute and certainly would not appear to represent a feasible business.

Richard Branson, billionaire and entrepreneur, has formed Virgin Galactic, a spaceship company with some very ambitious plans for space travel. Surprisingly, he is not alone; there are some 12 or 13 other space organizations worldwide with similar plans. Of course, there are setbacks, but Virgin Galactic plan to have to pay flights beginning in late 2017, with tickets at $250,000 each. Expensive? Yes! But there are over 20,000 people who have expressed interest, despite the tragic death of a co-pilot during a test flight accident.

It seems that people who want to take short zero gravity suborbital flights are fully aware of the dangers and are willing to take the risk. It is also worth noting that there were almost 2000 billionaires in the world in 2016, and that number is growing. So entrepreneurs like Richard Branson may represent the tip of the iceberg of young rich investors who want to make their childhood dreams of space travel come true.

Obviously, the key to the success of any business venture is to ensure that the price of the product maximises sales and to reduce the very high costs of the vehicles and rockets needed to do this. Currently, space vehicles can only be used once, so the race is on to develop reusable space vehicles. It is this reusability that will break the 'cost-barrier' and bring this activity into the price bracket where middle class and moderately wealthy people can afford it.

So what would you pay for a zero-gravity sub-orbital space trip? A recent, unscientific study, amongst US millennials (people who became adults around the year 2000) suggested that if the price of the flights was reduced by a factor of five – a figure entirely possible given the progress being made with reusable vehicles – the yield would be about $20 billion a year of revenues for the space tourism industry.

Twenty billion dollars is an interesting figure, as it is about the same amount generated each year by the film industry in the US through ticket, DVD and other sales. So now it is possible to make an analogy between the business model of Hollywood and space travel. Which do you think is more expensive? A Hollywood blockbuster, or the cost of a space launch? Back in the 1960s and 1970s, a space launch cost hundreds of times more than a Hollywood film. But as more money came to be spent on Hollywood movies, the cost of space travel has been decreasing. One particularly illustrative example is the comparison between the film *Avatar*, a movie about life on an 'exomoon,' and the Kepler spacecraft. Both of these costs about $400 million dollars. So for about half a billion dollars, you can either get a film about life on other planets, or you can pay for a mission, which may actually find Earth-like worlds. As a scientist, which is the better deal?

So what really is in the future for space travel? Probably offers of suborbital travel by companies like Virgin Galactic will become fairly common after the initial teething phase is over. Other companies are developing space hotels, so people who can afford more than just the space trips can spend their money

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holidaying in space. All the technologies allowing this to happen are advancing very rapidly and most of this is happening in the private sector.
Space is going to get commercialised and this may not be a good thing. Do we really want to see massive advertising signs in space? The moon littered with commercial rubbish? If this happens it will be very hard to regulate. While there is in existence a Treaty of the Moon, to acknowledge that no one can own the Moon or Mars, not one space-faring country has signed it.
The future of space travel has never been more exciting than it is now. Young children with pictures of planets and space rockets on their bedroom have a greater chance than ever of actually going into space than ever before. But at what cost?

Questions 14-18
Choose **FIVE** letter, **A-I**.
Write the correct letter in boxes **14-18** on your answer sheet.
NB *Your answers may be given in any order*
Below are listed some popular beliefs about commercial space travel.
Which five of these are reported by the writer of the text?
A Space travel today is no different than space travel in the 1960s.
B To date, the amount of space travel undertaken by private individuals could not sustain a business.
C Richard Branson's plans for commercial space travel may be described as 'daring.'
D It is not surprising that Branson's company is not the only company interested in commercial space travel.
E Virgin Galactic's proposed fares will be highly affordable to many.
F Individuals who want to fly into space are gamblers.
G Parallels can be drawn between space travel and the Hollywood movie industry.
H The rise of companies like Virgin Galactic is unconditionally positive.
I Laws governing space travel will be difficult to enforce.

Questions 19-26
Do the following statements agree with the information given in Reading Passage 2?
In boxes **19-26** 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 Space travel today remains under the control of the Russian and American governments.
20 The first commercial space passenger was Richard Branson.
21 The Virgin Group was established by Richard Branson in 1970.
22 Space vehicles are presently capable of being used more than once.
23 $20 billion is the amount that millennials currently spend on space travel.
24 The film 'Avatar' cost about $400 million to make.
25 It is unlikely that recycling will become common practice on the moon.
26 Children today have a better chance of realizing their dreams of space travel than children in the 1960's did.

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READING PASSAGE 3

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

Using Mathematics to Secure Our Money

A

Up until very recently people's wealth, mostly coins and jewels, was kept safe under lock and key. Rich medieval families would keep a strongbox with a large key, both of which were carefully hidden in different places. later the box may have been kept in a bank. In either case, potential thieves would need to find both the box and the key. A similar principle was used for sending secret diplomatic and military messages. The messages were written in code with both the sender and the receiver having the key to the code. Thus, while the message could be discovered its meaning could only be found if the 'key' was also known. And so began a long-running battle between code-makers who tried to make better keys and code-breakers who sought ways of finding them.

B

Nowadays, cryptography is central to how our money is kept secure, even though we may not be aware of it. Our money is no longer in a tangible form, but in the form of information kept with our banks. To keep everyone involved happy, the messages initiated by our plastic cards have to be sent and received safely and the entire operation must be carried out with a high level of confidentiality and security.

C

On a practical level, it is clear that the work of code-makers has been introduced into our daily financial lives. Our credit cards have 16-digit numbers on the front and a 3-digit number on the back. They also contain a 'chip' that can do all sorts of mysterious operations with these numbers. Finally, we also have a Personal Identification Number which we all need to memorize. All these numbers form a type of cryptographic key. However, as we shall see, modern cryptosystems are very different in the way the keys are used.

D

The main feature of the traditional systems was that only one key was needed by both the sender and the receiver to understand the message. However, the main problem was that the key itself needed to be communicated to both parties before they could use it. Obviously a major security risk. A very different approach was developed in the 1970s, based on a different way of using the keys. Now the main idea is that the typical user, let us call him Amir, has two keys; a 'public key' and a 'private key'. The public key is used to encrypt messages that other people wish to send to Amir, and the private key is used by Amir to decrypt these messages. The security of the system is based on keeping Amir's private key secret.

E

This system of public-key cryptography, known as RSA- from the names of the developers (Ronald Rivest, Adi Shamir and Leonard Adleman) – was developed in the late 1970s and is based on a collection of several mathematical algorithms. The first is a process that allows the user, Amir, to calculate two numerical keys: private and public, based on two prime numbers. To complete the RSA system, two more algorithms are then needed: one for encrypting messages and one for decrypting them.

F

The effectiveness of RSA depends on two things. It is efficient, because the encryption and decryption algorithms used by participants are easy, in a technical sense they can be made precise. On the other hand, it is believed to be secure, because no one has found an easy way of decrypting the encrypted message without knowing Amir's private key.

G

When the RSA system was first written about in Scientific American, the strength of the system was shown by challenging the readers to find the prime factors – the two original numbers – of a certain number with 129 digits. It took 17 years to solve this problem, using the combined efforts of over 600 people. So clearly it is a very secure system. Using mathematics in this way, scientists and technologists have enabled us to keep our money as secure as the rich medieval barons with their strong boxes and hidden keys.

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Questions 27-32

Reading Passage 3 has seven paragraphs, **A-G**.

Choose the correct heading for paragraphs **B-G** from the list of headings below.

*Write the correct number, **i-x**, in boxes **27-32** on your answer sheet.*

List of Headings

i The prevalence of numerical 'codes' in modern life
ii How RSA works
iii A brief history of keeping things safe
iv 'New math' vs 'medieval math'
v Proof that RSA is effective
vi The illusion of security
vii Cryptography: the modern key for the lock
viii Why RSA is effective
ix In defence of medieval security systems
x A new approach to system security

Example Answer
Paragraph **A** **iii**
27 Paragraph **B**
28 Paragraph **C**
29 Paragraph **D**
30 Paragraph **E**
31 Paragraph **F**
32 Paragraph **G**

Questions 33-36

Complete the notes below.

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

*Write your answers in boxes **33-36** on your answer sheet.*

Through the use of cryptography, banks keep money **33** ……
The way credit cards work is an example of the influence of **34** ……..
Cryptosystems developed in the 1970s relied on 2 keys: the **35** …… and
the **36** …….

Questions 37-40

Do the following statements agree with the views of the writer in Reading Passage 3?
*In boxes **37-40** 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

37 Online banking makes most people nervous
38 The way keys are used in modern cryptography is quite different from the past
39 The main problem with traditional cryptography systems is that neither party can decode the message.
40 The RSA system represents the most secure cryptography we are ever likely to develop.

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