Academic Reading Sample Task – Flow-chart Completion: selecting words from the text (Answers)

1 glucose

2 free radicals

3 preservation

Academic Reading Sample Task – Identifying Information: True/False/Not Given

[Note: This is an extract from a Part 1 text about the scientist Marie Curie.]

The life and work of Marie Curie

Marie Curie is probably the most famous woman scientist who has ever lived. Born Maria Sklodowska in Poland in 1867, she is famous for her work on radioactivity, and was twice a winner of the Nobel Prize. With her husband, Pierre Curie, and Henri Becquerel, she was awarded the 1903 Nobel Prize for Physics, and was then sole winner of the 1911 Nobel Prize for Chemistry. She was the first woman to win a Nobel Prize.

From childhood, Marie was remarkable for her prodigious memory, and at the age of 16 won a gold medal on completion of her secondary education. Because her father lost his savings through bad investment, she then had to take work as a teacher. From her earnings she was able to finance her sister Bronia's medical studies in Paris, on the understanding that Bronia would, in turn, later help her to get an education.

In 1891 this promise was fulfilled and Marie went to Paris and began to study at the Sorbonne (the University of Paris). She often worked far into the night and lived on little more than bread and butter and tea. She came first in the examination in the physical sciences in 1893, and in 1894 was placed second in the examination in mathematical sciences. It was not until the spring of that year that she was introduced to Pierre Curie.

Academic Reading Sample Task – Matching Headings

[Note: This is an extract from a Part 2 text about the physics of traffic behaviour.]

Questions 1 – 4

Reading Passage 1 has five sections, ***A-E****.*

Choose the correct heading for each section from the list of headings below.

Write the correct number, ***i-viii****, in boxes 1-4 on your answer sheet.*

List of Headings

i	Dramatic effects can result from small changes in traffic just as in nature
ii	How a maths experiment actually reduced traffic congestion
iii	How a concept from one field of study was applied in another
iv	A lack of investment in driver training
v	Areas of doubt and disagreement between experts
vi	How different countries have dealt with traffic congestion
vii	The impact of driver behaviour on traffic speed
viii	A proposal to take control away from the driver

1 Section **A**

Example

Section **B** **i**

2 Section **C**

3 Section **D**

4 Section **E**

The Physics of Traffic Behavior

A Some years ago, when several theoretical physicists, principally Dirk Helbing and Boris Kerner of Stuttgart, Germany, began publishing papers on traffic flow in publications normally read by traffic engineers, they were clearly working outside their usual sphere of investigation. They had noticed that if they simulated the movement of vehicles on a highway, using the equations that describe how the molecules of a gas move, some very strange results emerged. Of course, vehicles do not behave exactly like gas molecules: for example, drivers try to avoid collisions by slowing down when they get too near another vehicle, whereas gas molecules have no such concern. However, the physicists modified the equations to take the differences into account and the overall description of traffic as a flowing gas has proved to be a very good one; the moving-gas model of traffic reproduces many phenomena seen in real-world traffic.

The strangest thing that came out of these equations, however, was the implication that congestion can arise completely spontaneously; no external causes are necessary. Vehicles can be flowing freely along, at a density still well below what the road can handle, and then suddenly gel into a slow-moving ooze. Under the right conditions a brief and local fluctuation in the speed or the distance between vehicles is all it takes to trigger a system-wide breakdown that persists for hours. In fact, the physicists' analysis suggested such spontaneous breakdowns in traffic flow probably occur quite frequently on highways.

B Though a decidedly unsettling discovery, this showed striking similarities to the phenomena popularized as 'chaos theory'. This theory has arisen from the understanding that in any complex interacting system which is made of many parts, each part affects the others. Consequently, tiny variations in one part of a complex system can grow in huge but unpredictable ways. This type of dramatic change from one state to another is similar to what happens when a chemical substance changes from a vapor to a liquid. It often happens that water in a cloud remains as a gas even after its temperature and density have reached the point where it could condense into water droplets. However, if the vapor encounters a solid surface, even something as small as a speck of dust, condensation can take place and the transition from vapor to liquid finally occurs. Helbing and Kerner see traffic as a complex interacting system. They found that a small fluctuation in traffic density can act as the 'speck of dust' causing a sudden change from freely moving traffic to synchronized traffic, when vehicles in all lanes abruptly slow down and start moving at the same speed, making passing impossible.

C The physicists have challenged proposals to set a maximum capacity for vehicles on highways. They argue that it may not be enough simply to limit the rate at which vehicles are allowed to enter a highway, rather, it may be necessary to time each vehicle's entry onto a highway precisely to coincide with a temporary drop in the density of vehicles along the road. The aim of doing this would be to smooth out any possible fluctuations in the road conditions that can trigger a change in traffic behavior and result in congestion. They further suggest that preventing breakdowns in the flow of traffic could ultimately require implementing the radical idea that has been suggested from time to time: directly regulating the speed and spacing of individual cars along a highway with central computers and sensors that communicate with each car's engine and brake controls.

D However, research into traffic control is generally centered in civil engineering departments and here the theories of the physicists have been greeted with some skepticism. Civil engineers favor a practical approach to problems and believe traffic congestion is the result of poor road construction (two lanes becoming one lane or dangerous curves), which constricts the flow of traffic. Engineers questioned how well the physicists' theoretical results relate to traffic in the real world. Indeed, some engineering researchers questioned whether elaborate chaos-theory interpretations are needed at all, since at least some of the traffic phenomena the physicists' theories predicted seemed to be similar to observations that had been appearing in traffic engineering literature under other names for years; observations which had straightforward cause-and-effect explanations.

E James Banks, a professor of civil and environmental engineering at San Diego State University in the US, suggested that a sudden slowdown in traffic may have less to do with chaos theory than with driver psychology. As traffic gets heavier and the passing lane gets more crowded, aggressive drivers move to other lanes to try to pass, which also tends to even out the speed between lanes. He also felt that another leveling force is that when a driver in a fast lane brakes a little to maintain a safe distance between vehicles, the shock wave travels back much more rapidly than it would in the other slower lanes, because each following driver has to react more quickly. Consequently, as a road becomes congested, the faster moving traffic is the first to slow down.

Academic Reading Sample Task – Matching Headings (Answers)

1	iii	How a concept from one field of study was applied in another
2	viii	A proposal to take control away from the driver
3	v	Areas of doubt and disagreement between experts
4	vii	The impact of driver behavior on traffic speed

Academic Reading Sample Task – Sentence Completion

[Note: This is an extract from a Part 2 task about the evolution of birds and their ancestry.]

The origins of birds

The science of evolutionary relationships has undergone a major change in recent decades. It used to be the case that all the features of organisms were important in working out their family tree. But following the work of German entomologist Willi Hennig, many evolutionary scientists now believe that the only features which carry any useful information are the evolutionary 'novelties' shared between organisms. Mice, lizards and fish, for example, all have backbones – so the feature 'backbone' tells us nothing about their evolutionary relationship. But the feature 'four legs' is useful because it's an evolutionary novelty – a characteristic shared only between the lizard and the mouse. This would suggest that the lizard and mouse are more closely related to each other than either is to the fish. This revolutionary approach is called cladistics, and it has been central to the idea that birds evolved from dinosaurs.

The 'birds are dinosaurs' theory was first developed by English palaeontologist Thomas Huxley (1825–1895). According to some accounts, one evening Huxley went to dinner still thinking about a mystery dinosaur bone in his lab. He knew he was dealing with the lower leg bone (tibia) of a meat-eating, two-legged dinosaur belonging to the classification known as theropods, but attached to the tibia was an unidentified extra bone. On the menu that evening was quail, a small bird similar to a pheasant, and Huxley noticed the same strange bone, attached to the quail tibia on his plate. He later realised that it was in fact the bird's anklebone. More importantly, Huxley concluded that its forms in both dinosaur and bird skeletons were so similar that they must be closely related.

Huxley's idea fell out of favour for fifty years following the 1916 publication of The Origin of Birds by the Danish doctor Gerhard Heilmann. During this time, Heilmann's theory was widely accepted. Heilmann had noted that two-legged, meat-eating dinosaurs lacked collarbones. In later evolutionary stages these bones fuse together to form the distinctive 'Y'- shaped bone in a bird's neck, known as the furcula. Heilmann proposed the notion that such a feature could not be lost and then re-evolve at a later date, so dinosaurs could not be the ancestors of birds.

Then, in the late 1960s, John Ostrom from Yale University in the US, noted 22 features in the skeletons of meat-eating dinosaurs that were also found in birds and nowhere else. This reset the thinking on bird ancestry and once again Huxley's ideas caught the attention of the scientific community. Subsequent work has found up to 85 characteristics that tie dinosaurs and birds together. But what of Heilmann's missing bones? It turns out that not only did many dinosaurs have collarbones, these were also fused together into a furcula. Unfortunately for Heilmann, the fossil evidence was somewhat lacking in his day, and the few furculae that had been found were misidentified, usually as belly ribs

US ornithologist Alan Feduccia and palaeontologist Larry Martin are two vocal opponents of the dinosaur theory. They contend that birds evolved from some unknown reptile at a time long before dinosaurs. Their reasoning is that flight is most likely to have started from a tree-climbing ancestor, yet all the proposed dinosaurian ancestors were ground-dwellers. But the dino-bird supporters contend that an unknown dinosaurian bird-ancestor could have been tree-dwelling, or that birds evolved flight from the ground up by chasing and leaping after insects. Most of Feduccia and Martin's case against the 'birds-are-dinosaurs' hypothesis is based on differences between birds and dinosaurs. Supporters of cladistics, however, maintain that differences between organisms do not matter, as it is the similarities between them that count. Evolution dictates that organisms will change through time, so it is only the features which persist that carry useful information about their origins.

Most people on either side of the debate do accept, however, that the ancient winged creature known as Archaeopteryx is an ancestor of today's birds. This is in spite of the fact that its form is distinctly non-bird-like, with a long bony tail, and teeth instead of a beak. The 'birds-are-dinosaurs' supporters contend that, if clearly-preserved feathers had not been found alongside two of the seven Archaeopteryx specimens, it would probably have been identified as a small dinosaur. However, Archaeopteryx does have some bird-like features, such as a furcula and bird-like feet, that suggest that it is too bird-like to be considered a dinosaur.

Over the last few decades several dinosaurs with bird-like features and primitive birds with dinosaur-like features have been found in several countries, connecting Archaeopteryx back to dinosaurs, and forwards to modern birds. Sinosauropteryx, excavated from 130-million-year-old rocks in northeast China, is one example. It is a dinosaur skeleton surrounded by a halo of fuzz, thought to be primitive feathers. And a reassessment of other dinosaurs reveals such bird-like features as hollow bones and a foot with three functional toes, characteristics that appeared over 50 million years before Archaeopteryx took to the air. And Rahonavis, a primitive bird from Madagascar is more bird-like than Archaeopteryx, yet retains some distinctive dinosaur features, including a long and vicious claw at the end of its wing. Over a century since Huxley's discovery, it seems that cladistics may have finally settled the 'dino-bird' debate.

Questions 1 – 5

Complete the sentences below.

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

Write your answers in boxes 1-5 on your answer sheet.

1 Huxley formulated his theory while studying a dinosaur belonging to a group called …… .

2 Heilmann rejected Huxley's theory because of the apparent absence of.....in dinosaurs.

3 Feduccia and Martin believe that the ancestor of today's birds was a kind of early …… .

4 In cladistics, the ..... between organisms' characteristics are of major importance.

5 The dangerous.....on a primitive bird from Madagascar adds weight to the 'dino-bird' argument.

Academic Reading Sample Task – Sentence Completion (Answers)

1 theropods

2 collarbones

3 reptile

4 similarities

5 claw

Academic Reading Sample Task – Summary Completion: selecting from a list of words or phrases

[Note: This is an extract from a Part 3 text about language.]

'This Marvellous Invention'

Of all mankind's manifold creations, language must take pride of place. Other inventions – the wheel, agriculture, sliced bread – may have transformed our material existence, but the advent of language is what made us human. Compared to language, all other inventions pale in significance, since everything we have ever achieved depends on language and originates from it. Without language, we could never have embarked on our ascent to unparalleled power over all other animals, and even over nature itself.

But language is foremost not just because it came first. In its own right it is a tool of extraordinary sophistication, yet based on an idea of ingenious simplicity: 'this marvellous invention of composing out of twenty-five or thirty sounds that infinite variety of expressions which, whilst having in themselves no likeness to what is in our mind, allow us to disclose to others its whole secret, and to make known to those who cannot penetrate it all that we imagine, and all the various stirrings of our soul'. This was how, in 1660, the renowned French grammarians of the Port-Royal abbey near Versailles distilled the essence of language, and no one since has celebrated more eloquently the magnitude of its achievement. Even so, there is just one flaw in all these hymns of praise, for the homage to language's unique accomplishment conceals a simple yet critical incongruity. Language is mankind's greatest invention – except, of course, that it was never invented. This apparent paradox is at the core of our fascination with language, and it holds many of its secrets.

Questions 1 – 4

*Complete the summary using the list of words, **A-G**, below.*

*Write the correct letter, **A-G**, in boxes 1-4 on your answer sheet.*

The importance of language

The wheel is one invention that has had a major impact on **1.....**aspects of life, but no impact has been as **2** …… as that of language. Language is very **3** …… , yet composed of just a small number of sounds. Language appears to be **4** …… to use. However, its sophistication is often overlooked.

A	difficult	**B**	complex	**C**	original
D	admired	**E**	material	**F**	easy
G	fundamental				

Academic Reading Sample Task – Summary Completion: selecting from a list of words or phrases (Answers)

1 E ■ material

2 G ■ fundamental

3 B ■ complex

4 F ■ easy

Academic Reading Sample Task – Summary Completion: selecting words from the text

[Note: This is an extract from a Part 3 text about the 'Plain English' movement, which promotes the use of clear English.]

'The Cambridge Encyclopaedia of Language', David Crystal, 3rd Edition, © Cambridge University Press, 2010.

The instructions accompanying do-it-yourself products are regularly cited as a source of unnecessary expense or frustration. Few companies seem to test their instructions by having them followed by a first-time user. Often, essential information is omitted, steps in the construction process are taken for granted, and some degree of special knowledge is assumed. This is especially worrying in any fields where failure to follow correct procedures can be dangerous.

Objections to material in plain English have come mainly from the legal profession. Lawyers point to the risk of ambiguity inherent in the use of everyday language for legal or official documents, and draw attention to the need for confidence in legal formulations, which can come only from using language that has been tested in courts over the course of centuries. The campaigners point out that there has been no sudden increase in litigation as a consequence of the increase in plain English materials.

Similarly, professionals in several different fields have defended their use of technical and complex language as being the most precise means of expressing technical or complex ideas. This is undoubtedly true: scientists, doctors, bankers and others need their jargon in order to communicate with each other succinctly and unambiguously. But when it comes to addressing the non-specialist consumer, the campaigners argue, different criteria must apply.

Questions 1 – 5

Complete the summary below.

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

Write your answers in boxes 1-5 on your answer sheet.

Consumers often complain that they experience a feeling of **1.....** when trying to put together do-it-yourself products which have not been tested by companies on a **2** …… . In situations where not keeping to the correct procedures could affect safety issues, it is especially important that **3.....**information is not left out and no assumptions are made about a stage being self-evident or the consumer having a certain amount of **4** …… .

Lawyers, however, have raised objections to the use of plain English. They feel that it would result in ambiguity in documents and cause people to lose faith in **5.....** , as it would mean departing from language that has been used in the courts for a very long time.

Academic Reading Sample Task – Summary Completion: selecting words from the text (Answers)

1 frustration

2 first-time user

3 essential

4 special knowledge

5 legal formulations