IELTS Reading Strategies

TO SOLVE FLOW-CHART QUESTIONS:

A flow-chart diagram is used to show the sequence of events in a process. Such questions are rarely asked but can account for 5-8 marks for a reading passage. Passages involving description of a process or a series of events mostly include such questions. Here the information may not be given in the same sequence as in the passage. Make sure you read the whole passage so that you can locate any keywords or paraphrases from the questions. With our tips & practise papers we are sure you're going to enjoy solving such question and get correct answers

GUIDELINES TO SOLVE: FLOW-CHART COMPLETION QUESTIONS:

1. Skim read the entire passage to get the overall idea of the passage. (5 min)
2. Understand what kind of information is given in each paragraph. You can give headings to each paragraph for your self-understanding. This way it's easy for you to locate the paragraph which contains the information asked.
3. Study the note completion task and decide what type of information you need to find out.
4. Underline the relevant keywords of the statement to help you locate your answer.
5. Look for the paragraphs which have this text and also for keywords and paraphrases from the question.
6. This task focuses on specific details like numbers, dates, definitions, objects.
7. Carefully read the note completion text, before and after the words you have found.
8. Fill in the gaps with suitable words considering the word limit mentioned in the question.
9. Spend less than 6 min to complete this task.

Let's look at the application of the above-mentioned guidelines for the following passage below.

Practice reading 1.1

BAKELITE

The birth of modern plastics

In 1907, Leo Hendrick Baekeland, a Belgian scientist working in New York, discovered and patented a revolutionary new synthetic material. His invention, which he named 'Bakelite', was of enormous technological importance, and effectively launched the modern plastics industry.

The term 'plastic' comes from the Greek *plassein*, meaning 'to mould'. Some plastics are derived from natural sources, some are semi-synthetic (the result of chemical action on a natural substance), and some are entirely synthetic, that is, chemically engineered from the constituents of coal or oil. Some are 'thermoplastic', which means that, like candlewax, they melt when heated and can then be reshaped. Others are 'thermosetting': like eggs, they cannot revert to their original viscous state, and their shape is thus fixed for ever. Bakelite had the distinction of being the first totally synthetic thermosetting plastic.

The history of today's plastics begins with the discovery of a series of semi-synthetic thermoplastic materials in the mid-nineteenth century. The impetus behind the development of these early plastics was generated by a number of factors – immense technological progress in the domain of chemistry, coupled with wider cultural changes, and the pragmatic need to find acceptable substitutes for dwindling supplies of 'luxury' materials such as tortoiseshell and ivory.

Baekeland's interest in plastics began in 1885 when, as a young chemistry student in Belgium, he embarked on research into phenolic resins, the group of sticky substances produced when phenol (carbolic acid) combines with an aldehyde (a volatile fluid similar to alcohol). He soon abandoned the subject, however, only returning to it some years later. By 1905 he was a wealthy New Yorker, having recently made his fortune with the invention of a new photographic paper. While Baekeland had been busily amassing dollars, some advances had been made in the development of plastics. The years 1899 and 1900 had seen the patenting of the first semi-synthetic thermosetting material that could be manufactured on an industrial scale. In purely scientific terms, Baekeland's major contribution to the field is not so much the actual discovery of the material to which he gave his name, but rather the method by which a reaction between phenol and formaldehyde could be controlled, thus

making possible its preparation on a commercial basis. On 13 July 1907, Baekeland took out his famous patent describing this preparation, the essential features of which are still in use today.

The original patent outlined a three-stage process, in which phenol and formaldehyde (from wood or coal) were initially combined under vacuum inside a large egg-shaped kettle. The result was a resin known as Novalak, which became soluble and malleable when heated. The resin was allowed to cool in shallow trays until it hardened, and then broken up and ground into powder. Other substances were then introduced: including fillers, such as woodflour, asbestos or cotton, which increase strength and moisture resistance, catalysts (substances to speed up the reaction between two chemicals without joining to either) and hexa, a compound of ammonia and formaldehyde which supplied the additional formaldehyde necessary to form a thermosetting resin. This resin was then left to cool and harden, and ground up a second time. The resulting granular powder was raw Bakelite, ready to be made into a vast range of manufactured objects. In the last stage, the heated Bakelite was poured into a hollow mould of the required shape and subjected to extreme heat and pressure, thereby 'setting' its form for life.

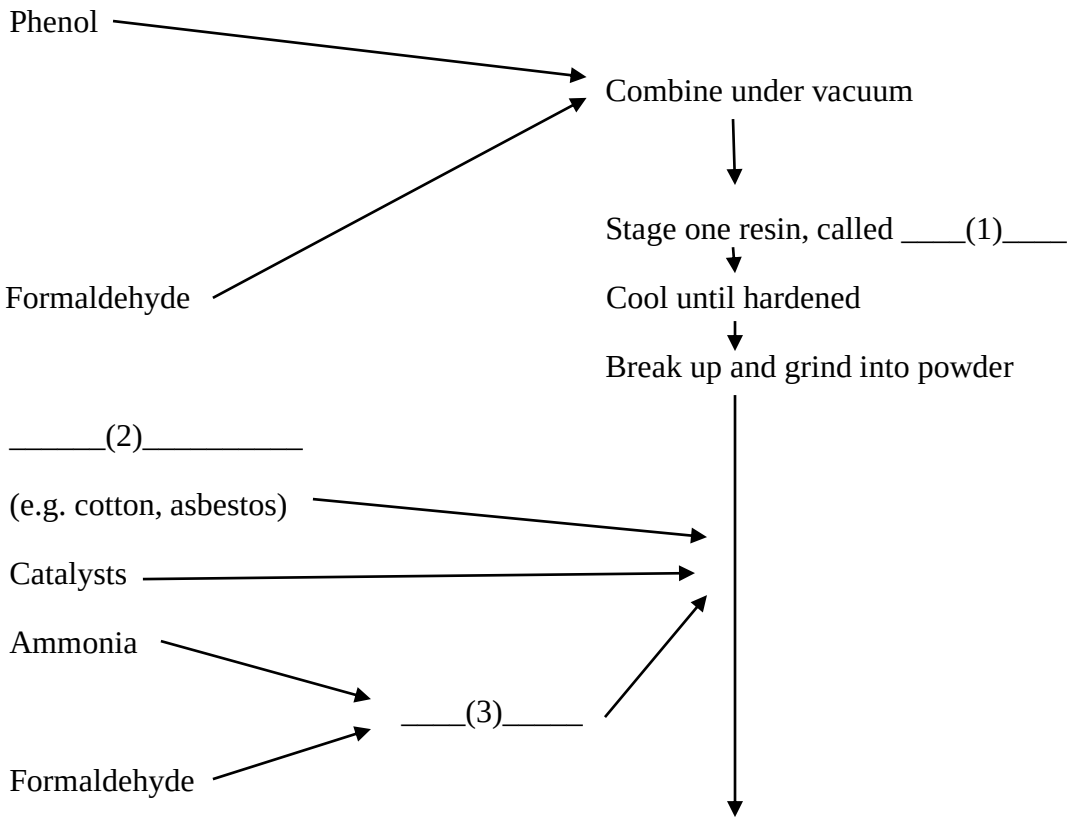
The design of Bakelite objects, everything from earrings to television sets, was governed to a large extent by the technical requirements of the moulding process. The object could not be designed so that it was locked into the mould and therefore difficult to extract. A common general rule was that objects should taper towards the deepest part of the mould, and if necessary the product was moulded in separate pieces. Moulds had to be carefully designed so that the molten Bakelite would flow evenly and completely into the mould. Sharp corners proved impractical and were thus avoided, giving rise to the smooth, 'streamlined' style popular in the 1930s. The thickness of the walls of the mould was also crucial: thick walls took longer to cool and harden, a factor which had to be considered by the designer in order to make the most efficient use of machines.

Baekeland's invention, although treated with disdain in its early years, went on to enjoy an unparalleled popularity which lasted throughout the first half of the twentieth century. It became the wonder product of the new world of industrial expansion – 'the material of a thousand uses'. Being both non-porous and heat-resistant, Bakelite kitchen goods were promoted as being germ-free and sterilisable. Electrical manufacturers seized on its insulating properties, and consumers everywhere relished its dazzling array of shades, delighted that they were now, at last, no longer restricted to the wood tones and drab browns of the pre-plastic era. It then fell from favour again during the 1950s, and was despised and destroyed in vast quantities. Recently, however, it has been experiencing something of a renaissance, with renewed demand for original Bakelite objects in the collectors' marketplace, and museums, societies and dedicated individuals once again appreciating the style and originality of this innovative material.

Complete the flow-chart.

Choose ONE WORD ONLY from the passage for each answer. **The TWO questions below are solved for you.**

THE PRODUCTION OF BAKELITE



Stage two resin

Cool until hardened

Break up and grind into powder

_____(4)_____ Bakelite

Heat

Pour into mould

Apply intense heat and ____(5)____

Cool until hardened

Solved examples:

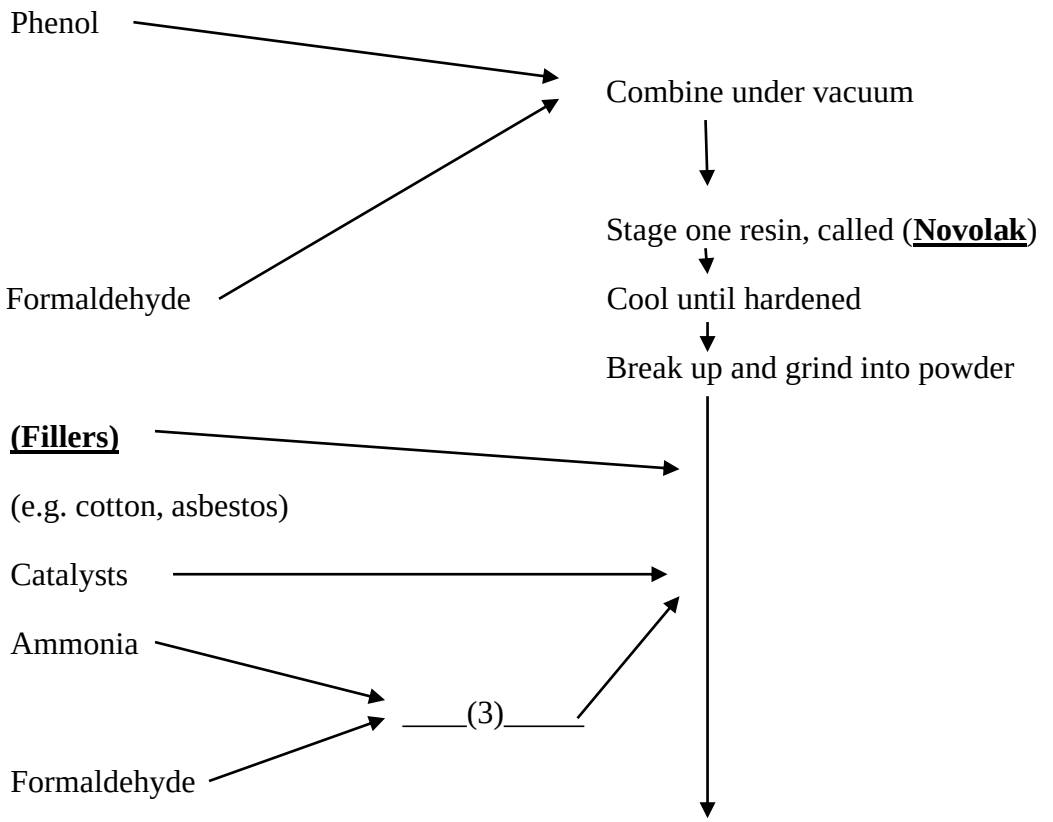
1. This text belongs to the **paragraph E** which explains the three stage process of Bakelite production. The first gap requires the stage one resin which is produced by combining phenol and formaldehyde under vacuum. The answer can be traced from the following text, '.....were initially combined under vacuum inside a large egg-shaped kettle. The result was a resin known as **Novalak**, which became soluble and malleable when heated. This indicates that the word for the fill in the gap is **Novalak.**
2. The second gap text shows the reference of fillers like asbestos, cotton or wood flour which are required for the second stage resin. The answer can be traced from the following text, 'other substances were then introduced: including **fillers**, such as wood flour, asbestos or cotton, which increase strength and moisture resistance, necessary to form a thermosetting resin.' This indicates that the word for the fill in the gap is **fillers**.

Practice Exercise 1.1

Complete the flow-chart.

Choose ONE WORD ONLY from the passage for each answer.

THE PRODUCTION OF BAKELITE



Stage two resin

Cool until hardened

Break up and grind into powder

_____(4)_____ Bakelite

Heat

Pour into mould

Apply intense heat and ____(5)____

Cool until hardened

Practice reading 1.2

The Search for the Anti-aging Pill

***In* government *laboratories* and elsewhere, scientists *are* seeking a drug able to prolong *life and youthful vigor.* Studies of *caloric* restriction *are* showing the way**

As researchers on aging noted recently, no treatment on the market today has been proved to slow human aging - the build-up of molecular and cellular damage that increases vulnerability to infirmity as we grow older. But one intervention, consumption of a low-calorie* yet nutritionally balanced diet, works incredibly well in a broad range of animals, increasing longevity and prolonging good health. Those findings suggest that caloric restriction could delay aging and increase longevity in humans, too.

Unfortunately, for maximum benefit, people would probably have to reduce their caloric intake by roughly thirty per cent, equivalent to dropping from 2,500 calories a day to 1,750. Few mortals could stick to chat harsh a regimen, especially for years on end. But what if someone could create a pill that mimicked the physiological effects of eating less without actually forcing people to eat less? Could such a 'caloric-restriction mimetic', as we call it, enable people to stay healthy longer, postponing age-related disorders (such as diabetes, arteriosclerosis, heart disease and cancer) until very lace in life? Scientists first posed this question in the mid-1990s, after researchers came upon a chemical agent that in rodents seemed to reproduce many of caloric restriction's benefits. No compound that would safely achieve the same feat in people has been found yet, but the search has been informative and has fanned hope that caloric-restriction (CR) mimetics can indeed be developed eventually.

The benefits of caloric restriction

The hunt for CR mimetics grew out of a desire to better understand caloric restriction's many effects on the body. Scientists first recognized the value of the practice more than 60 years ago, when they found that rats fed a low-calorie diet lived longer on average than free-feeding rats and also had a reduced incidence of conditions that become increasingly common in old age. What is more, some of the treated animals survived longer than the oldest-living animals in the control group, which means that the maximum lifespan (the oldest attainable age), not merely the normal lifespan, increased. Various interventions, such as infection-fighting drugs, can increase a population's average survival time, but only approaches chat slow the body's rate of aging will increase the maximum lifespan.

The rat findings have been replicated many times and extended to creatures ranging from yeast to fruit flies, worms, fish, spiders, mice and hamsters. Until fairly recently, the studies were limited short-lived creatures genetically distant from humans. But caloric-restriction projects underway in two species more closely related to humans - rhesus and squirrel monkeys - have scientists optimistic that CR mimetics could help people.

calorie: a measure of the energy value of food

The monkey projects demonstrate that, compared with control animals that eat normally. caloric-restricted monkeys have lower body temperatures and levels of the pancreatic hormone insulin, and they retain more youthful levels of certain hormones that tend to fall with age.

The caloric-restricted animals also look better on indicators of risk for age-related diseases. For example, they have lower blood pressure and triglyceride levels(signifying a decreased likelihood of heart disease),and they have more normal blood glucose levels(pointing to a reduced risk for diabetes, which is marked by unusually high blood glucose levels).Further, it has recently been shown that rhesus monkeys kept on caloric-restricted diets for an extended time(nearly 15 years) have less chronic disease. They and the other monkeys must be followed still longer, however, to know whether low-calorie intake can increase both average and maximum lifespans in monkeys. Unlike the multitude of elixirs being touted as the latest anti-aging cure, CR mimetics would alter fundamental processes that underlie aging. We aim to develop compounds that fool cells into activating maintenance and repair.

How a prototype caloric-restriction mimetic works

The best-studied candidate for a caloric-restriction mimetic, 2DG (2-deoxy-D-glucose), works by interfering with the way cells process glucose, it has proved toxic at some doses in animals and so cannot be used in humans. But it has demonstrated that chemicals can replicate the effects of caloric restriction; the trick is finding the right one.

Cells use the glucose from food to generate ATP (adenosine triphosphate), the molecule that powers many activities in the body. By limiting food intake, caloric restriction minimizes the amount of glucose entering cells and decreases ATP generation. When 2DG is administered to animals that eat normally, glucose reaches cells in abundance but the drug prevents most of it from being processed and thus reduces ATP synthesis. Researchers have proposed several explanations for why interruption of glucose processing and ATP production might retard aging. One possibility relates to the ATP-making machinery's emission of free radicals, which are thought to contribute to aging and t such age-related diseases as cancer by damaging cells. Reduced operation of the machinery should limit their production and thereby constrain the damage. Another hypothesis suggests that decreased processing of glucose could indicate to cells that food is scarce(even if it isn't) and induce them to shift into an anti-aging mode that emphasizes preservation of the organism over such 'luxuries' as growth and reproduction.

Practice Exercise 1.2

Complete the flow-chart.

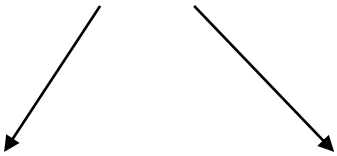
Choose NO MORE THAN TWO WORDS from the passage for each answer.

HOW A CALORIC RESTRICTION MIMETIC WORKS

CR Mimetic

Less ____(1)_____ is processed

Production of ATP is decreased



Theory 1:	Theory 2:
Cells less damaged by disease because fewer _____ (2) _____ are emitted.	Cells focus on _____(3)_____ because food is in short supply.

IELTS Reading Strategies

ANSWER KEY

EXERCISE 1.1

1. Novalak
2. Fillers
3. Hexa
4. Raw
5. pressure

EXERCISE 1.2

1. glucose
2. free radicals
3. preservation

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