

**Skill building pack: Communication****Answering essay questions**

In DSE Biology, there is an essay question in paper 1B. It scores about 10–12 marks. In this total mark, **3 marks are awarded for effective communication**. The following four steps can help you present your arguments concisely and systematically when answering essay questions.

**Step 1 Read the question carefully**

While you are reading the question, **underline** the key points and **circle** all the command words (e.g. compare, contrast, explain, state, etc.). This can remind you what should be included in the essay.

**Sample question:**

Reflex actions and tropism are responses of humans and plants respectively when they detect certain stimuli. Contrast these two types of responses and state their significance to the organisms.

**Step 2 Organize your ideas**

Use a table, a mind map or a flow chart to organize your ideas. When it is finished, check if the ideas are coherent and systematic. Cross out any irrelevant information.

<i>Reflex action</i>	<i>Tropism</i>
<i>Stimuli involved may not be unilateral</i>	<i>Stimuli involved are unilateral</i>
<i>Responses are usually fast</i>	<i>Responses are usually slow</i>
<i>Responses do not involve growth</i>	<i>Responses involve growth</i>
<i>Responses are usually not directional</i>	<i>Responses are directional</i>
<i>Messages transmitted are electrical (nerve impulses) and chemical (neurotransmitters) in nature</i>	<i>Messages transmitted are chemical (auxins) in nature</i>
<i>Significance: Many reflex actions (e.g. withdrawal reflex) protect us from danger</i>	<i>Significance: Positive phototropism of shoots enables leaves to reach a position where they can obtain the maximum amount of light for photosynthesis</i>

**Step 3 Write the essay**

Divide the essay into three parts:

**1 Introduction**

Briefly describe the main theme of the essay. Avoid too much background information.

*Organisms can detect stimuli and respond to them. Reflex actions and tropism are important responses of humans and plants respectively. These two types of responses are different in a number of ways.*

**2 Body**

Write in paragraphs. Each paragraph should have a main point and the point is explained, elaborated or supported by evidence.

*Firstly, the stimuli involved in reflex actions may not be unilateral while those involved in tropism are unilateral. Secondly, reflex actions are usually fast and non-directional. However, tropic responses in plants are much slower and directional. Thirdly, unlike tropism which involves growth of certain parts of the body, reflex actions do not involve growth. Lastly, the nature of messages involved in the two types of responses is different. In reflex actions, messages are transmitted through nerve impulses which are electrical in nature, and through neurotransmitters which are chemical in nature. In tropism, messages are transmitted mainly through auxins which are chemical in nature.*

*Many reflex actions protect us against danger. For example, withdrawal reflex enables us to protect the body from being burnt or cut. In plants, positive phototropism of shoots enables leaves to reach a position where they can obtain the maximum amount of light for photosynthesis.*

**3 Conclusion**

Sum up our points and restate the main theme.

*Though reflex actions and tropism are different in several ways, both of them are important for the survival of organisms.*

After writing, check if the essay includes the necessary information. Make sure there are no spelling mistakes or inappropriate use of words.

## Practice

### Essay question:

Lipids and proteins are two primary food substances which are essential to life. Compare their functions in the human body.

Use a table, a mind map or a flow chart to organize your ideas. Draw it in the space below.

Suggested table:

	Lipids	Proteins
Similar functions	<ul style="list-style-type: none"> <li>• components of the cell membrane</li> <li>• for making hormones</li> <li>• produce ATP</li> <li>• as energy reserves</li> <li>• for protection</li> </ul>	
Different functions	<ul style="list-style-type: none"> <li>• transport lipid-soluble vitamins</li> <li>• as an insulator</li> <li>• for making myelin sheath</li> </ul>	<ul style="list-style-type: none"> <li>• as enzymes</li> <li>• as antibodies</li> <li>• as haemoglobin</li> <li>• for blood clotting</li> </ul>

**Write your essay in the space below.**

Lipids and proteins have many functions in the human body. Some of the functions are similar but some are unique to each type of biomolecule.

Both lipids and proteins are components of the cell membrane. They are also used for making hormones such as steroids (lipids) and insulin (proteins). Both of them act as energy reserves and can be broken down to produce ATP. Moreover, lipids and proteins offer protection to the body. For example, adipose tissues around the internal organs can act as a shock absorber and keratin in nails can provide mechanical protection.

Besides the above common functions, lipids and proteins have their own specific functions in the body. For example, lipids are a solvent for some vitamins (e.g. vitamins A and D). Moreover, they are a good insulator to reduce heat loss from the body. Lipids are also used for making myelin sheath around nerve fibres to speed up the transmission of nerve impulses.

Some proteins are enzymes. They can catalyse the biochemical reactions in the body. Proteins can act as antibodies which act against the pathogens invading the body. Some proteins are transporters such as the oxygen carrier haemoglobin. Fibrous proteins are involved in blood clotting. They form a network to trap the red blood cells.

Lipids and proteins have some similar but also some different functions in the human body. They are both important biomolecules.

## 技巧提升教材：傳意

# 論述題作答技巧

DSE 生物科試卷 1B 設有一條論述題，佔大約 10 至 12 分，當中有 3 分屬傳意方面的評分。以下步驟有助你回答論述題時能更清晰和有系統地寫出你的論點。

### 步驟 1 理解問題

閱讀試題時，在重要的資料下劃線，並把「比較」、「解釋」、「指出」等指令詞圈起來，以提醒自己答案應包含的要點，避免遺漏。

例題：

反射動作和向性分別是人和植物對環境刺激作出的反應。指出這兩種反應的差異和它們對生物的重要性。

### 步驟 2 整合知識

利用表格、概念圖或流程圖整合各個論點和事實。完成後，檢查內容是否有條理，並刪去與問題無關的資料。

反射動作	向性
涉及的刺激未必來自單一方向	涉及的刺激來自單一方向
反應通常較快	反應通常較慢
反應不涉及生長	反應涉及生長
反應是沒有方向的	反應是有方向的
信息以電流訊號（神經脈衝）及化學物（神經遞質）的性質傳遞	信息只以化學物（生長素）的性質傳遞
重要性： 很多反射動作（例如退縮反射）可幫助人脫離危險，避免身體受傷	重要性： 枝條的正向光性可讓葉子獲得最多光來進行光合作用，以製造食物

**步驟 3 撰寫短文**

把短文分為三個部分：

**1 引言**

簡述文章的主題，無須提供過多背景資料。

生物能夠探測環境的刺激，並作出反應。反射動作和向性分別是人和植物兩類重要的反應，它們在很多方面都存在差異，以下將加以說明。

**2 內文**

內文可包含數個段落，在每個段落中明確指出一個論點或事實，並加以論證或闡釋。

首先，反射動作所涉及的刺激未必來自單一方向，但向性涉及的刺激是來自單一方向的。第二，反射動作產生的反應通常較快和沒有方向。相反，向性反應通常較慢，而且是有方向的。第三，反射動作不涉及生長，而向性則涉及身體某些部位的生長。此外，反射動作和向性所涉及的信息傳遞在性質上也有差別。在反射動作中，信息以神經脈衝和神經遞質傳遞。神經脈衝是電流訊號，而神經遞質是化學物。然而，在向性中，信息只以生長素這種化學物傳遞。

很多反射動作都幫助我們脫離危險，避免身體受傷。例如，當身體不小心觸到尖銳或灼熱物體時，退縮反射可讓有關的身體部位立即縮回，從而保護身體免受進一步的傷害。在植物方面，向性對植物的生長十分重要，例如枝條的正向光性可讓葉子獲得最多光來進行光合作用，以製造食物。

**3 總結**

把論點歸納起來，並重申文章主題。

雖然反射動作和向性在很多方面都存在差異，但它們對生物的生存十分重要。

完成後，檢查文章是否已包含所有必需的資料，同時修正錯別字和用詞不當的地方。

# 練習

## 論述題：

脂質和蛋白質是兩種基本食物物質，對維持生命非常重要。比較兩者在人體內的功能。

在下面的空位內，畫出表格、概念圖或流程圖，以整合你的論點。

### 參考表格：

	脂 質	蛋 白 質
相同的功能	<ul style="list-style-type: none"> <li>● 製造細胞膜</li> <li>● 製造激素</li> <li>● 產生 ATP</li> <li>● 作為能量儲備</li> <li>● 起保護作用</li> </ul>	
不同的功能	<ul style="list-style-type: none"> <li>● 轉運脂溶性維生素</li> <li>● 作為絕緣體</li> <li>● 製造髓鞘</li> </ul>	<ul style="list-style-type: none"> <li>● 作為酶</li> <li>● 作為抗體</li> <li>● 作為血紅蛋白</li> <li>● 幫助血液凝固</li> </ul>

在下面的空位內，寫出短文。

脂質和蛋白質的功能甚多。在人體內，這兩種生物分子既有一些相同的功能，也有一些不同的功能，以下將加以說明。

脂質和蛋白質兩者都用來製造細胞膜，也用來製造激素，例如類固醇（屬脂質）和胰島素（屬蛋白質）。此外，它們都作為身體的能量儲備，於分解時產生 ATP。脂質和蛋白質亦起保護身體的作用，例如內臟周圍的脂肪組織可以保護內臟免受震盪，而指甲中的角蛋白則可以提供機械性保護。

除了以上共同的功能外，脂質和蛋白質在人體內也有各自獨特的功能。例如，脂質是脂溶性維生素（例如維生素 A 和 D）的溶劑。此外，由於脂質是良好的絕緣體，因此有助身體減少失熱。脂質也是包圍着神經纖維的髓鞘的主要成分，髓鞘可加快神經脈衝的傳遞速度。

在蛋白質方面，部分蛋白質是酶，能催化體內的生化反應。蛋白質也可以作為抗體，對抗入侵身體的病原體。有些蛋白質負責物質的轉運，例如血紅蛋白負責運送氧。纖維狀蛋白質能交結成網狀，把紅血細胞困於網內，幫助血液凝固。

從以上可見，脂質和蛋白質在人體內既有一些相同的功能，也有一些不同的功能，它們對身體都十分重要。