Question 1

Question	Answers	Extra information	Mark
01.1	stomata	Allow stoma.	**1**
01.2	photosynthesis		**1**
01.3	(air spaces) allow gases to move easily through the leaf/ reduce distance for diffusion maintains a steep concentration gradient		**1** **1**
Total			**4**

Question 2

Question	Answers	Extra information	Mark
02.1	The movement of particles/ molecules from an area of high concentration to an area of low concentration.	Allow down a concentration gradient.	**1**
02.2	oxygen in the water diffuses into the gill fibres and is transported away in the blood this maintains a steep concentration gradient so increases the rate of diffusion		**1** **1** **1**
02.3	• many gill filaments/ folds in the membrane/lamellae • increases the surface area for diffusion • membranes of gill filaments are only one cell thick • provides a short diffusion pathway	Explanations must be linked to correct adaptation.	**1** **1** **1** **1**
Total			**8**

Question 3

Question	Answers	Extra information	Mark
03.1	2 ÷ 0.05 = 40 40:1	An answer of 40:1 with no working shown scores **2** marks.	**1** **1**
03.2	multicellular organisms have a smaller surface area to volume ratio (than single-celled organisms) so there is a smaller surface available for diffusion/diffusion across the surface is less efficient specialised exchange surfaces increase the rate of diffusion	Allow as the size of the organism increases, the surface area to volume ratio decreases.	**1** **1** **1**
03.3	continual movement of blood through the capillaries moves oxygen away from the lungs maintains a steep concentration gradient		**1** **1**
03.4	the surface area (to volume ratio) of the lungs is reduced reduces surface available for diffusion rate of gas exchange will be reduced/gas exchange is less efficient		**1** **1** **1**
Total			**10**