6 In the pulmonary circulation of a mammal, deoxygenated blood becomes oxygenated when red blood cells pass through alveolar capillaries and haemoglobin within the cells combines with oxygen.

The blood returns to the heart to be pumped around the systemic circulation.

(a) Describe the sequence of events occurring in the heart that allows blood returning in the pulmonary circulation to then enter the systemic circulation.

You should include in your description:

- the names of the relevant blood vessels of the pulmonary circulation and systemic circulation that are connected to the heart
- reference to blood pressure changes that cause the opening and closing of valves.

You **do not** need to include details of control of the cardiac cycle.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

(b) Fig. 6.1 is a drawing of a haemoglobin molecule to show its globular structure.

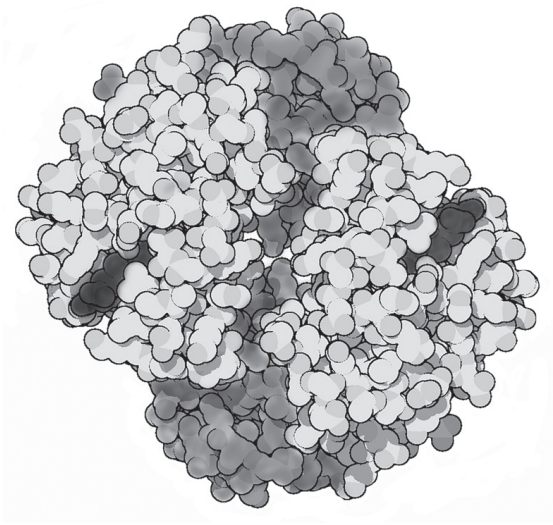

Fig. 6.1

(i) Describe the quaternary structure of a haemoglobin molecule.

.....

.....

.....

.....

..... [2]

(ii) Outline how a haemoglobin molecule can become fully saturated with oxygen to form oxyhaemoglobin.

.....

.....

.....

.....

..... [2]

[Total: 9]

The boundaries and names shown, the designations used and the presentation of material on any maps contained in this question paper/insert do not imply official endorsement or acceptance by Cambridge Assessment International Education concerning the legal status of any country, territory, or area or any of its authorities, or of the delimitation of its frontiers or boundaries.