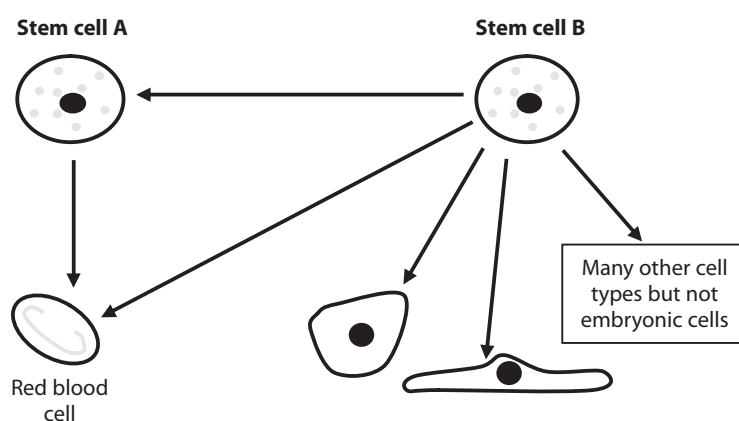


- 4 (a) The diagram below shows two different stem cells and the differentiated cells that they can form.



- (i) Use the diagram to explain why stem cell B is described as **pluripotent**.

(2)

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- (ii) Suggest **one** site where stem cell A may be found in an **adult** human.

(1)

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- (iii) All the differentiated cells derived from stem cell B have the same genotype but have very different structures and functions. This is due to differential gene expression.

Explain how **differential gene expression** can enable cells which have the same genetic material to have very different structures and functions.

(3)

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- (b) Three examples of how temperature affects organisms are given below. If the example is due to differential gene expression, place a cross (☒) in the box to the right of that example.

(1)

| Examples   |                          |
|--|--------------------------|
| The rate of protein synthesis within a plant is temperature dependent.                           | <input type="checkbox"/> |
| The gender of turtles is determined by the temperature of the ground in which the eggs are laid. | <input type="checkbox"/> |
| Asexual reproduction is more rapid in bacteria if the temperature is higher.                     | <input type="checkbox"/> |

(Total for Question 4 = 7 marks)

