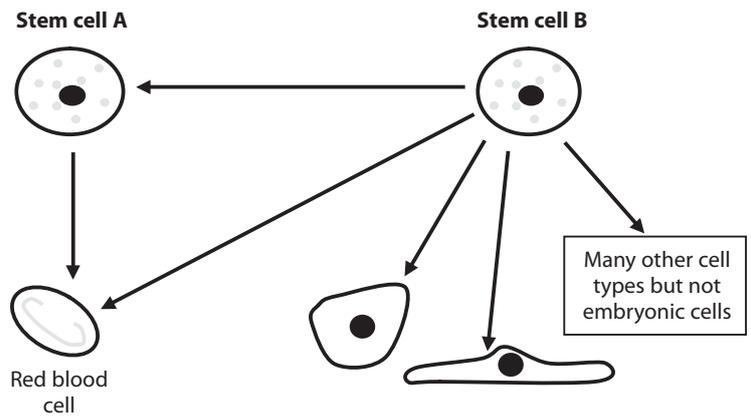


4 (a) The diagram below shows two different stem cells and the differentiated cells that they can form.



(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)

