

9. (a) A single stem cell can give rise to many genetically identical cells of different types. There are, for example, adult stem cells in the human brain which are capable of producing the different types of brain cells including nerve cells (neurones).

Scientists are trying to find ways of growing such adult brain stem cells in the laboratory.

- (i) Name the type of cell division by which a stem cell can give rise to many genetically identical cells.

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(1)

- (ii) Explain how cells produced from stem cells can have the same genes yet be of different types.

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(2)

- (iii) Suggest why it might be useful to keep a supply of live stem cells from your brain in a laboratory.

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(2)



- (i) Suggest why research with embryonic stem cells is further advanced than research with adult stem cells.

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(2)

- Are you for or against embryonic stem cell research?

Using your scientific knowledge and your understanding of the ethical issues associated with embryonic stem cell research, explain why you hold this view.

[illegible]

(4)

(Total 11 marks)

TOTAL FOR PAPER: 70 MARKS

END

