**HUMAN BIOLOGY UNIT 2**

**STEM CELLS EXTENDED RESPONSE VALIDATION**

**WEIGHTING 4%**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE: \_\_\_\_\_\_\_\_\_\_\_ Total Marks \_\_\_\_/ 30**

1. What are three characteristics of stem cells in comparison to somatic cells? (3 Marks)

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2. Using blood cells as an example, explain how stem cells are able to produce two types of daughter cells - somatic cells as well as stem cells of its potency? Draw a diagram to help illustrate your answer. (4 Marks)

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3. Explain the difference between the three types of stem cells, including their potency, sources, and accessibility. (9 Marks)

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4. Why do researchers choose to harvest embryonic stem cells five to six days after fertilisation and not a week or later when there would be far more cells? (2 Marks)

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5. Discuss, using specific examples, three present and potential **biotechnological** or **medical applications** of stem cells. (6 marks)

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6. Explain how an embryonic stem cell can be created from a patient’s adult stem cell or somatic cell. (2 Marks)

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7. Why is it a significant advantage to make stem cells from the patient’s own cells? (2 Marks)

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8. Identify and discuss two ethical concerns regarding stem cell therapies today and/or potential uses of stem cell technology in the future.

(2 marks)

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**END OF VALIDATION TEST**