

1(a). When a baby is born, stem cells are found in the fluid (amniotic fluid) surrounding it.

Another type of stem cell is found in the embryo itself.

These are called embryonic stem cells.

If a baby is born before it is due, its intestines may not be fully developed.

In the future, it may be possible to treat this problem using stem cells.

Look at the statements A to F.

- A Embryonic stem cells can develop into all types of cells.
- B Removal of amniotic fluid is not a difficult procedure.
- C Stem cells from the amniotic fluid will not be rejected by the baby.
- D It is difficult to store amniotic fluid from every birth just in case it is needed.
- E Using stem cells to treat underdeveloped intestines has only been done on rats.
- F Removing embryonic stem cells may result in the death of the embryo.

Which **one** of the statements, A to F, best suggests why it may be ...

... more ethical to use amniotic stem cells instead of embryonic stem cells?

(b). ... easier to obtain stem cells from amniotic fluid than from embryos?

[1]

(c). ... more successful to use the baby's own stem cells than stem cells from a donor?

[1]

(d). ... that embryonic stem cells still have the best potential to treat many different conditions?

[1]

[1]

2. The use of **embryonic** stem cells for research and treatment of patients is subject to Government regulation.

Suggest **two** ethical issues to be considered when carrying out this work.

[2]

END OF QUESTION PAPER

Mark Scheme

Question			Answer/Indicative content	Marks	Guidance
1	a		F	1	<p>Examiner's Comments</p> <p>This question presented candidates with statements about the possible future use of stem cells to treat intestinal problems in premature babies. Candidates as a whole found this question difficult. Parts a-c proved most difficult; candidates performed slightly better on part (d) with over half of candidates identifying the correct statement.</p>
	b		B	1	<p>Examiner's Comments</p> <p>This question presented candidates with statements about the possible future use of stem cells to treat intestinal problems in premature babies. Candidates as a whole found this question difficult. Parts a-c proved most difficult; candidates performed slightly better on part (d) with over half of candidates identifying the correct statement.</p>
	c		C	1	<p>Examiner's Comments</p> <p>This question presented candidates with statements about the possible future use of stem cells to treat intestinal problems in premature babies. Candidates as a whole found this question difficult. Parts a-c proved most difficult; candidates performed slightly better on part (d) with over half of candidates identifying the correct statement.</p>
	d		A	1	<p>Examiner's Comments</p> <p>This question presented candidates with statements about the possible future use of stem cells to treat intestinal problems in premature babies. Candidates as a whole found this question difficult. Parts a-c proved most difficult; candidates performed slightly better on part (d) with over half of candidates identifying the correct statement.</p>
			Total	4	

Mark Scheme

Question		Answer/Indicative content	Marks	Guidance
2		<p><i>any two from:</i> playing God / against religious beliefs / it's not right / it's wrong (1) the embryo is destroyed / killed (1) the patient will be carrying genes / DNA from another person (1) surgery required but transplanted tissue may not function (1) tissue may be rejected (1) embryos could (be implanted in a uterus and) grow into a fetus / baby / new life (1) doctors will choose the patients for treatment (1)</p>	2	<p>accept any other realistic ethical issue</p> <p>ignore ref to cruelty embryo destroyed and not become a baby = 2 marks</p> <p>Examiner's Comments</p> <p>For this question candidates were asked to discuss 2 ethical issues. Just under half of the candidates were able to discuss one ethical issue.</p>
		Total	2	