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Exercise 1: - *15 minutes to answer the question.*

The passage below is based on a number of issues concerning human reproduction.

> During the process of *in vitro* fertilisation many spermatozoa and ova of the couple are used and therefore many embryos are formed. Not all the embryos are implanted into the female. The embryos that are not used are called 'spare' embryos. The 'spare' embryos could be used in ethical or unethical ways.
>
> It is possible to determine the sex of the various embryos formed. If this is possible, couples may have the option of selecting the sex of their child and hence have the appropriate embryo implanted. There could be advantages and disadvantages resulting from offering such a choice.
>
> While some people are trying hard to have children, others are trying various methods to prevent falling pregnant. The use of contraceptives is promoted by some cultures, but not supported by others.

Write a mini-essay that explains TWO opposing viewpoints, each with a reason, which people might have on each of the THREE issues that have been outlined in the passage. (12)

Synthesis: (3)

NOTE: NO marks will be awarded for answers in the form of flow charts or diagrams.

(Taken from DoE/ November 2008)

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Exercise 2: - *12 minutes to answer the question.*

The data below resulted from a study conducted in the USA. Use the data and your knowledge of Life Science to answer the questions that follow:

Method of contraception	**Effectiveness of method (Pregnancies / 1000 users / year)**
Male sterilization	3.5
Female sterilization	6.0
Hormone implant	3.0
Injectable hormones	10.0
Intra-uterine device	3.0
The pill	5.0
The mini-pill	7.0
Condoms	9.0
A diaphragm	15.0
Vaginal spermicides	17.0
Periodic abstinence	20.0
Vaginal sponge	22.0

(Source: The Economist)

5.1. Give a heading for the table. (2)
5.2. What was the independent variable in this study? (1)
5.3. What type of graph would you draw to make the results easier to read? Give a reason for your answer. (3)
5.4. Suggest two other variables (factors) that should have been taken into consideration in this study to improve accuracy. Provide a reason for your answer. (4)
5.5. Which was the least effective method of contraception? (1)
5.6. Choose one of the most successful methods of contraception and explain why you think it was effective. (2)
5.7. Condoms are not rated as very effective in this study, yet their use is being promoted by the Department of Health in South Africa. Why? (2)
(IEB Exemplar Paper 2008 Paper 1)

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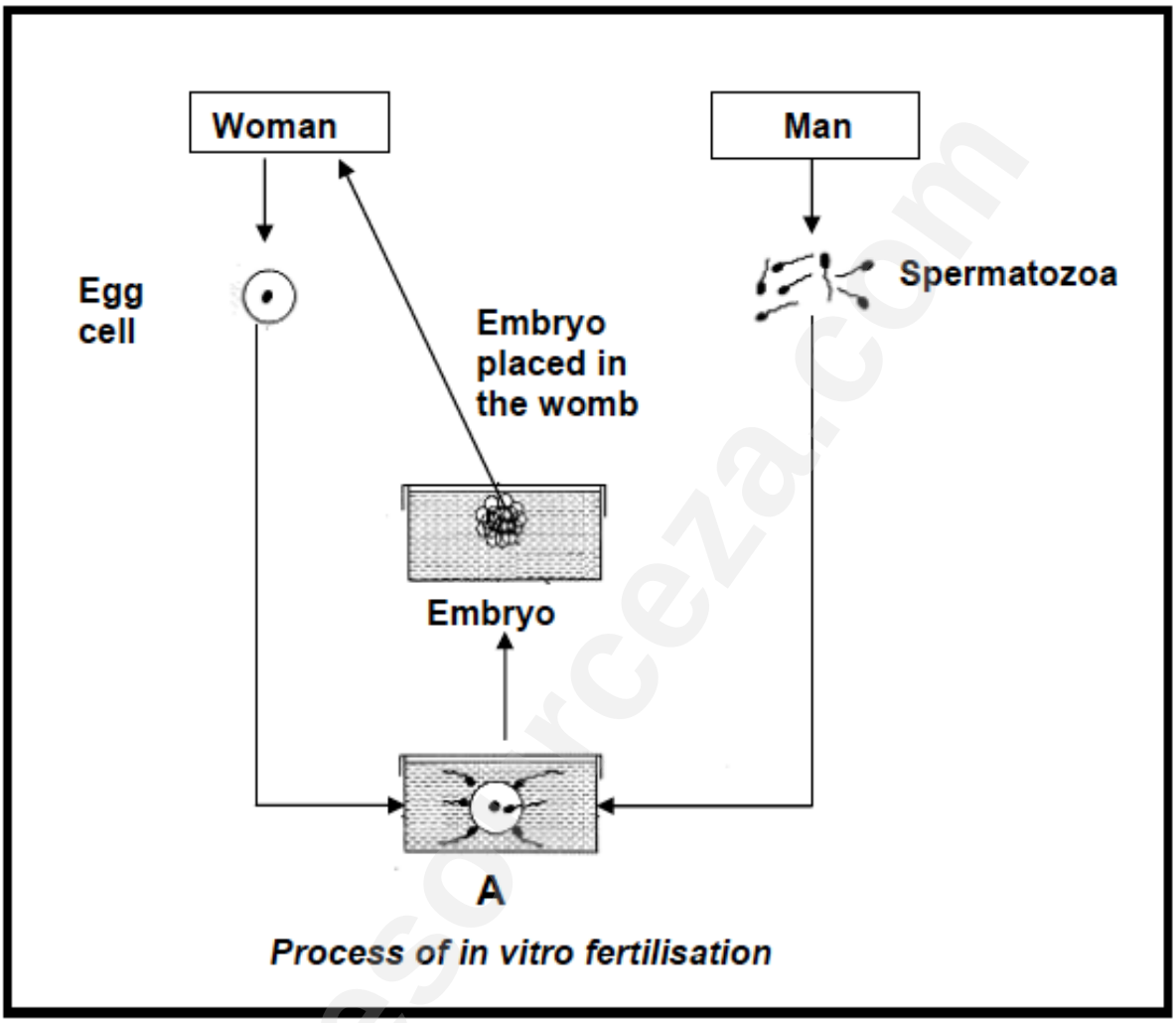
Exercise 3 : - *8 minutes to answer the questions + 5 minutes to go over answer.*

The diagram below illustrates what happens during in vitro fertilisation (IVF).



Process of in vitro fertilisation

6.1. What process takes place at **A**? (1)
6.2. Give TWO reasons why a couple may not be able to have children normally. (2)
6.3. In IVF more embryos are produced than can be implanted in the woman's uterus. Explain whether each of the following uses of the spare embryos is ethical or not:
(a) It could be sold to couples that cannot have children (2)
(b) It could be used to enhance research in embryology (2)
6.4. State ONE way in which IVF differs from cloning. (2)
(Taken from DoE/ Feb/March 2009)

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