**ATAR HUMAN BIOLOGY – UNIT 2**

**Task 10 – Extended Response – Assisted Reproductive Technologies (ART)**

NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **WEIGHTING: 7.5 %**

TEACHER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **PART 1 MARKS = \_\_\_\_\_\_\_\_\_ /30 =\_\_\_\_\_\_\_\_\_\_**

**PART 2 MARKS = \_\_\_\_\_\_\_\_\_ /23 =\_\_\_\_\_\_\_\_\_\_**

**TOTAL = \_\_\_\_\_\_\_\_\_ / 100**

Lucy and Fred have been trying to have a baby for several years with no success. They decided to go to a clinic for testing to determine why Lucy has not become pregnant. When the test results came back Lucy, had a severe scarring in her fallopian tubes cause d by the untreated *Chlamydia*. While Fred was found to have a *Sperm Allergy.*

Given Lucy and Fred’s situation, there are various issues and decisions they face while considering the use of Assisted Reproductive Technologies. Before they can consider these issues they need to first understand the problems they face.

a) Explain how a Fred’s sperm allergy could be responsible for Lucy not getting pregnant. (3 marks)

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b) Which procedure, **out of GIFT or ICSI,** would be the best option for Lucy and Fred to have a baby?

Justify your answer. (6 marks)

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c) Discuss the potential risks associated with the procedure you have selected in part (b) to Fred and

Lucy. (4 marks)

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d) What moral and ethical viewpoints will Lucy and Fred need to consider when going through the

ART process. (4 marks)

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e) Once Lucy and Fred have conceived a child they may then choose to have the embryo screened.

Describe a process the couple could use to screen their developing embryo and discuss three ethical considerations they may have to consider. (6 marks)

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**Answer Key**

**Part 2**

Given Lucy and Fred’s situation, write an extended response outlining the various issues and decisions they face while considering the use of assisted reproductive technologies. Construct your response using the following guideline.

a) Explain how a Fred’s sperm allergy could be responsible for Lucy not getting pregnant. (3 marks)

**\* one mark per suitable answer eg**

*\* antibodies damage or destroy sperm cells*

*\* results in low sperm count*

*\* results in reduces chance of pregnancy*

*\* fewer sperm to reach egg*

b) Which procedure, **out of GIFT or ICSI,** would be the best option for Lucy and Fred to have a baby?

Justify your answer. (6 marks)

**\* one mark per suitable answer eg**

*\* ICSI*

*\* possible blockage of fallopian tubes (- GIFT)*

*\* damaged sperm unable to fertilise egg (- GIFT)*

*\* healthy sperm selected (+ ICSI)*

*\* sperm injected into egg (+ ICSI)*

*\* Fertilised egg cultured / developed in lab (+ ICSI)*

*\* Blastocyst - developed egg / implanted into*

*endometrium by catheter (+ ICSI***)**

c) Discuss the risks associated with the procedure you have selected in part (b). (4 marks)

**\* one mark per suitable answer eg**

*\* negative reaction to medication (a specific one must be named)*

*\* multiple births - twins, triplets*

*\* birth defects*

*\* procedure may not work*

*\* miscarriage*

*\* complications at birth*

*\* ectopic pregnancy*

*\* low birth weight*

*\* premature birth*

*\* stress on relationship*

d) What ethical viewpoints will Lucy and Fred need to consider when going through the ART process. (4 marks)

**\* one mark per suitable answer eg**

*\* what to do with extra eggs / sperm / embryo’s*

*\* who owns eggs / sperm / embryo’s*

*\* when does life begin*

*\* financial strain*

*\* turning reproduction into a business / babies a commodity*

*\* stress on relationship*

e) Once Lucy and Fred have conceived a child they may then choose to have the embryo screened.

Describe a process the couple could use to screen their developing embryo and discuss three ethical considerations they may have to consider. (6 marks)

**Name a procedure (1)**

*eg Chorionic villi sampling, amniocentesis, genetic screening of embryo whilst being cultured outside the womb*

**Accurate Description of the process (2)** **OR**

**Some minor mistake (1)**

*eg sample taken from…….. (1)*

*Collecting cell sample from embryo (1)*

*Test chromosomes from cells (1)*

**Ethical considerations (3)** –

*if the embryo has a genetic defect what will they do*

*What is referred to as a “severe” genetic defect – what do they class as too*

*severe to keep*

*if we say lets destroy the embryo because it has ……, how does that make*

*people in society feel if they have that condition*

*if our embryo is all good, what do we do with extra embryos*

*shall we donate embryos to research/other people (how does thatimplicate to future generations)*

**(any three suitable ethics discussed, not just simply stated)**