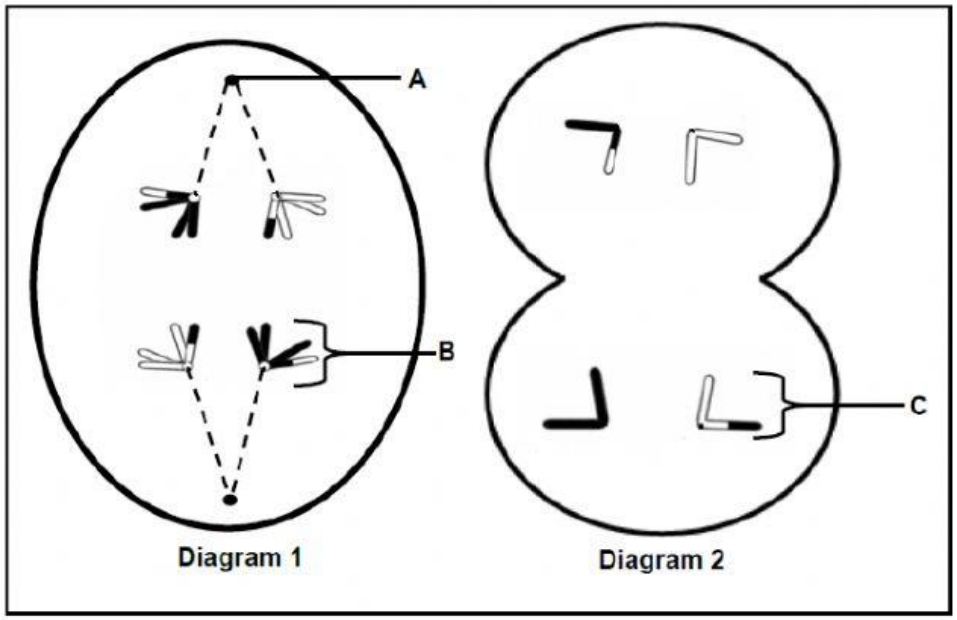
QUESTION 3

3.1 The diagrams below represent two phases of meiosis.



3.1.1 Identify part **A**. (1)

3.1.2 Identify the phase represented by diagram **1**. (1)

3.1.3 Describe the events that took place in the phase before the one represented in diagram **2**. (2)

3.1.4 Name the process that causes the chromosomes to have a combination of genes as shown in the diagrams. (1)

3.1.5 Give ONE reason why the process named in QUESTION 3.1.4 is important. (1)

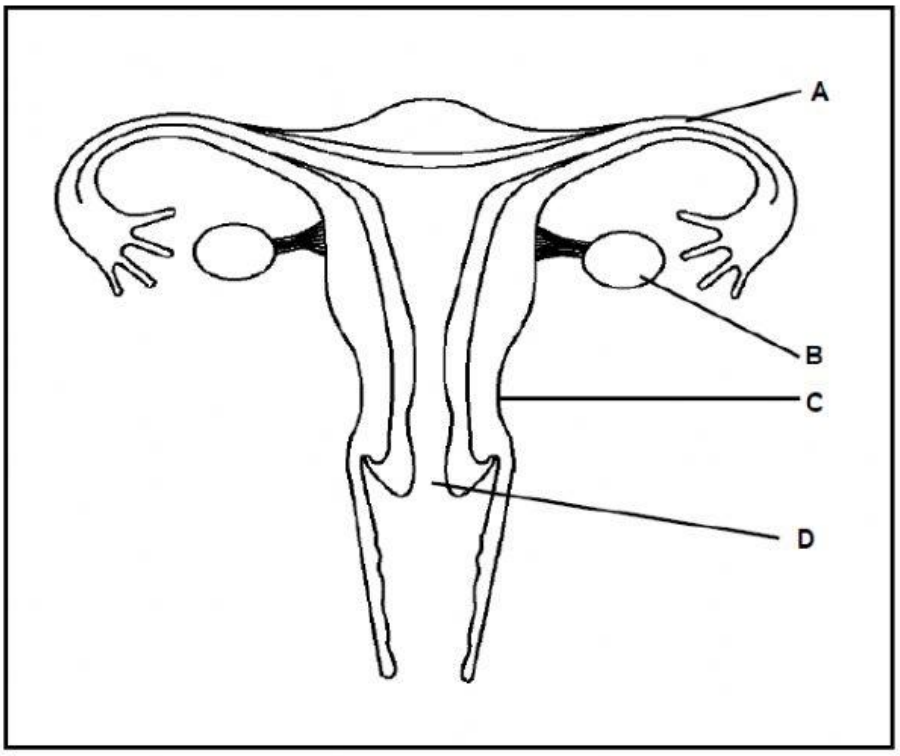
LIVEWORKSHEETS

3.1.6 If this was a human cell, how many chromosomes would be present in the cell during the phase represented in diagram **1**? (1)

3.1.7 Structure **B** and structure **C** are both chromosomes.

Explain why they are structurally different. (3)
(10)

3.2 The structure below represents a part of the female reproductive system.



3.2.1 Identify part **D**. (1)

LIVEWORKSHEETS

3.2.2 State ONE function of part **A**. (1)

3.2.3 Describe the process of oogenesis as it occurs in part **B**. (4)

3.2.4 State ONE way in which structure **C** is suited for its function during pregnancy (1)

3.2.5 A person undergoes a surgical operation to remove part **B** on both sides.

Explain why this person will not menstruate. (3)
(10)

LIVEWORKSHEETS

3.3 Male hormone contraceptive (birth control) pills have been in development for over 50 years. The pills contain a substance called TU, which inhibits the secretion of testosterone. There is, however, no product available on the market yet, mainly due to many side effects associated with the product.

An investigation was done to determine how TU affects male fertility.

The procedure was as follows:

- 308 healthy, male volunteers were selected.
- A sperm count for each volunteer was done initially.
- Each volunteer was given 500 mg of TU monthly over a period of 12 months.
- During the period of the investigation, the volunteers were asked to wear loose-fitting trousers and underwear made of the same light fabric.
- A sperm count was done weekly over a period of 24 months.
- The average sperm count was calculated per volunteer.

NOTE: Sperm count refers to the total number of healthy sperm per ml of semen and is an indication of male fertility.

3.3.1 Identify the dependent variable in the investigation. (1)

3.3.2 State how the dependent variable in QUESTION 3.3.1 was measured. (1)

3.3.3 Name TWO other factors that should be considered when selecting volunteers. (2)

3.3.4 Explain how TU reduces fertility. (2

3.3.5 Explain why wearing tight-fitting trousers will decrease male fertility. (2)

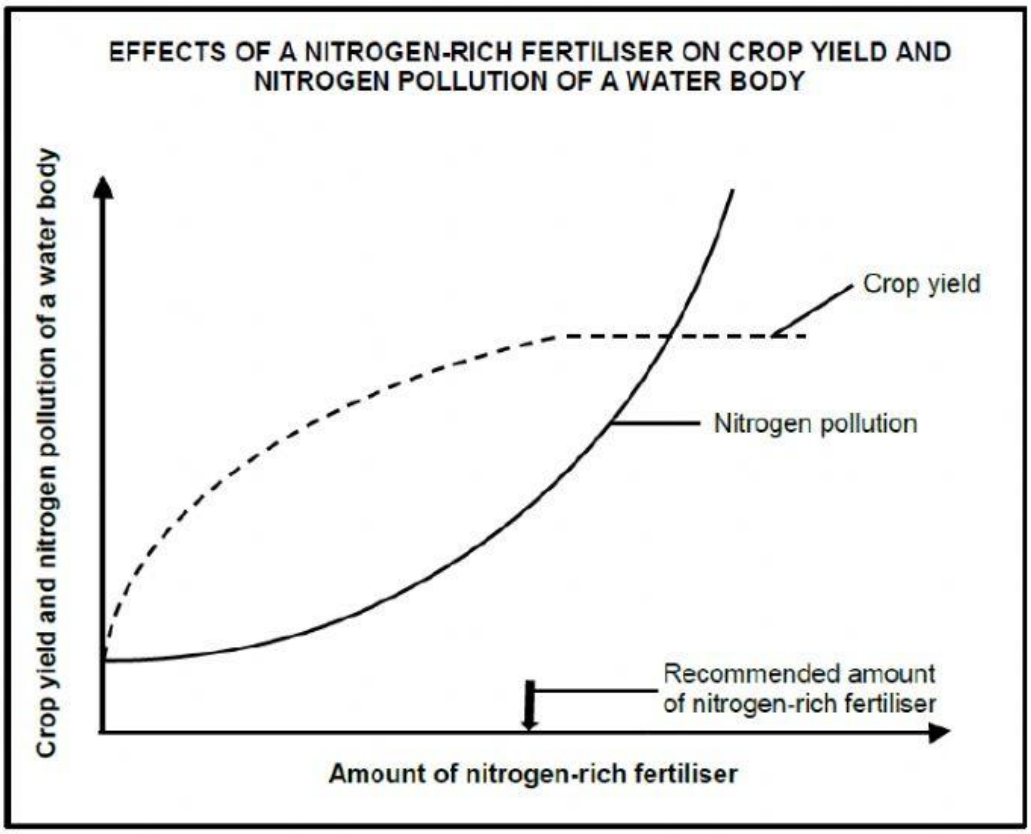
3.3.6 Suggest ONE reason for doing the sperm count for an additional 12 months after stopping the TU treatment. (1)

LIVEWORKSHEETS

3.3.7 The contraceptive options that are currently available for men are limited to condoms and vasectomy. Vasectomy involves the cutting and tying of both the vas deferens.

Explain how a vasectomy prevents pregnancy. (2)
(11)

3.4 The graph below shows the influence of a nitrogen-rich fertiliser on crop yield and nitrogen pollution of a nearby water body.



3.4.1 Name the process whereby excess nutrients accumulate in a water body. (1)

3.4.2 Explain why it will not economically benefit the farmer to use more than the recommended amount of fertiliser.

LIVEWORKSHEETS

3.4.3 Suggest ONE reason why farmers are advised to apply fertilisers to the soil during the dry season of the year. (1)

3.4.4 Explain the effect that an increase in nitrogen pollution will have on the number of bacteria in the water. (4)

(9)

[40]

TOTAL SECTION B: 80

LIVEWORKSHEETS