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ST ALBAN'S COLLEGE
LIFE SCIENCES PRELIMINARY EXAMINATION PAPER 2
SEPTEMBER 2020
QUESTION PAPER

EXAMINER: K. Dewar

MARKS: 100

MODERATORS: J. Brits (Internal)

TIME: 2 hours

J. Nel (External)

NAME: _____

INSTRUCTIONS:

- This paper consists of a question paper (4 pages) and source booklet (12 pages)
- Answer all questions on folio paper
- All sources should be read and consulted when completing this paper
- Question 3 is an essay question, which requires a plan. Please note that the plan will be marked as part of this question

QUESTION 1

Read the Case study entitled “The Science Behind Commercial Banana Farming” and answer the questions below:

- 1.1. Write the terms for the following descriptions:
 - a. A type of banana with its own unique genetics, appearance and taste
 - b. An underground stem
 - c. A group of small flowers within a banana flower (3)
- 1.2. Are the following statements true or false? Just write T or F.
 - a. India produces more than double the volume of bananas than China
 - b. The tenth largest banana producer in the world is Burundi
 - c. Bananas form a large portion of developing countries' economy (3)
- 1.3. What type reproduction takes place in commercially farmed bananas? Substantiate your answer. (2)
- 1.4. Tabulate TWO advantages and TWO disadvantages of the type of reproduction from 1.3. (5)
- 1.5. Commercial bananas are triploid. How are triploid organisms developed and why are triploid crops useful? (3)

- 1.6. List TWO visible differences between commercial and wild bananas. (2)
- 1.7. Traditionally, crops were bred (sexually) to produce favourable characteristics. Presume that large leaves are favourable in banana plants. Draw a flowchart to explain how this deliberate cross-breeding will take place. (4)
- 1.8. Provide the LETTER and the NAME of the parts from figure 4 that correspond to the following descriptions:
 - a. Produce the male gamete (2)
 - b. Thicken to form the fruit after fertilisation (2)
- 1.9. What is the difference between fertilisation and pollination? (2)
- 1.10. "Sexual reproduction is the basis of evolution." Explain why this statement is accurate. (2)

QUESTION 1 TOTAL [30]

QUESTION 2

Read the case study entitled "An Unusual Case of Human Reproduction" and answer the questions below:

- 2.1. Write the terms from the text for the following descriptions:
 - a. A chemical factor that is released and elicits a response in members of the same species
 - b. A temporary organ that forms during pregnancy
 - c. A sac-like organ that surrounds a foetus and contains fluid to protect the foetus. (3)
- 2.2. Which of the following terms best describes the strategy that humans follow with regards to birthing offspring? Write only the LETTER.

A	Oviparous
B	Viviparous
C	Ovoviviparous

(1)
- 2.3. If Andrea has a 26-day menstrual cycle, on which day of a normal cycle would she be most likely to ovulate? (1)
- 2.4. Which of the **non-permanent** contraceptive methods in Table 1 would you recommend a young woman without children to use? Explain your choice. (2)

- 2.5. If the data from Table 1 was taken from a sample of 500 couples for each type of contraception, how many pregnancies resulted from the Withdrawal Method? Show your calculations. (3)
- 2.6. In the text, Andrea completed a number of home pregnancy tests to make sure the first one wasn't a false positive. Which do you think is more likely- a false positive or false negative- in a home pregnancy test? Substantiate your answer. (4)
- 2.7. Why is it necessary to have a control strip in a pregnancy test? (1)
- 2.8. Which of the Graphs from Figure 2 represent the Ovarian Hormones in the cycle? Write only the LETTER. (1)
- 2.9. Briefly discuss the functions of hormones C and E in the menstrual cycle. (2)
- 2.10. Construct a flow diagram in which you describe the negative feedback of the ovarian and pituitary hormones in the female menstrual cycle. (4)
- 2.11. Sketch a graph of the pattern that progesterone will follow if in a cycle, if fertilisation and implantation occurs during that cycle. (2)
- 2.12. Briefly discuss the stages of labour by explaining what occurs at each point. (3)
- 2.13. Do you think the twins came from the same father or different fathers? Substantiate your answer. (3)

QUESTION 2 TOTAL [30]

QUESTION 3

“Of all the drugs used illicitly in sport, designer steroids are by far the most dangerous and controversial form of doping in sports”

Using the information from the sources as well as your own knowledge, write an essay in which you discuss your opinion on the above statement. The essay should be around 2 ½ - 3 pages in length (do not include a word count).

To answer this question, you are expected to:

- Read the sources A-J carefully and present a debated argument to illustrate your point of view
- Select relevant information from the sources. Do not attempt to use all information from all of the sources
- It is important to integrate your own relevant biological knowledge. However, do not write an essay based solely on your own knowledge
- Take a definite stand on the question and arrange the information to best develop your argument
- Write in a way that is scientifically appropriate and communicates your point of view clearly
- Provide a clear plan of your essay before you begin writing. The plan will be marked as part of the assessment for this question

**QUESTION 3 TOTAL [40]
GRAND TOTAL [100]**