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LIFE SCIENCE PRELIMINARY EXAMINATION

PAPER 2

MARKING GUIDELINES

QUESTION 1

- 1.1. a. Cultivar ✓
 b. Rhizome ✓
 c. Hand ✓ (3)

- 1.2. a. T ✓
 b. F ✓
 c. T ✓ (3)

- 1.3. Vegetative/Asexual Reproduction ✓. Reproduction is done without flowers or seeds/
 Reproduction is done from Rhizome cuttings/ offspring plants are genetically identical to a single
 parent plant etc. ✓ *only ONE reason needed for substantiation* (2)

- 1.4. Title: Table showing advantages and disadvantages of asexual reproduction ✓

Advantages	Disadvantages
Known Genetic composition for offspring	No Genetic Variation , so no evolution/improvement of the crop over time
More energy efficient than sexual reproduction	Not able to adapt to new environments easily
Plants thrive in unchanging environment	If environment changes then plants may not survive
Much faster than growing plant from seed	Disease may affect all plants in a population
Disease-free plants can be formed	
Plants can be reproduced in any season	

✓ for title

✓✓ for TWO correct advantages

✓✓ for TWO correct disadvantages

Mark FIRST TWO for each only

Subtract one mark if not in table form. (5)

- 1.5. By fusing of a diploid and a haploid gamete ✓✓. Triploid crops are useful because they form larger
 fruit/ are more hardy/ better at adapting to environments ✓ **max ONE advantage** (3)

- 1.6. – wild bananas are smaller whilst commercial bananas are larger ✓

- Wild bananas have seeds whilst commercial bananas do not ✓
- Wild bananas have a thin skin whilst commercial bananas have a thicker skin ✓

- Wild bananas have skin with two layers/ juicy inner layer whilst commercial bananas have more complex skin structure/ no juicy inner layer ✓

Max TWO marks for 2 complete correct comparisons (2)

- 1.7. Two parent plants with large leaves are selected ✓ → pollen from one parent plant is extracted ✓ → pollen is placed on female part of flower of parent plant/ parent plant is pollinated with selected pollen ✓ → fertilisation takes place/ zygote or seed is produced with favourable characteristic ✓

SUBTRACT 1 mark if not in flowchart form (4)

- 1.8. a. A ✓ Anther ✓
b. H ✓ ovary ✓ (4)

- 1.9. Pollination: pollen landing on the stigma of a plant ✓
Fertilisation: fusing of male and female gametes to form a zygote/seed ✓ (2)

- 1.10. Evolution requires variation in a population ✓
Variation is obtained by sexual reproduction ✓ by meiosis/crossing over/ random fertilisation etc. ✓ (3)

QUESTION 2

- 2.1. a. Pheromone ✓ b. Placenta ✓ c. Amniotic Sac ✓ (3)

- 2.2. B ✓ (1)

- 2.3. Day 13 ✓ (1)

- 2.4. IUD/ Injectables/ Oral Contraceptives ✓ Substantiation ✓

EG. IUD ✓ because it is implanted for a few years at a time, so therefore very convenient/ no stress about forgetting to take a pill or purchase a condom etc. ✓

Injectables ✓. Once every few months/ uses hormones that the body is familiar with/ no need to remember to purchase contraceptives ✓

Oral Contraceptives ✓. Are very reliable when taken correctly/ also helps to regulate menstrual cycle/ easy to obtain ✓

DO NOT AWARD ANY MARKS FOR: lactational amenorrhea/ tubal ligation/ vasectomy/ male condoms (2)

- 2.5. 27% of 500 ✓ = 135 ✓ pregnancies ✓ (3)

2.6. A false negative is more likely ✓ than a false positive. The test detects HCG hormone ✓ in the urine, which is only present when pregnancy occurs ✓. So a false positive is not possible/likely OR a false negative is more likely to occur due to very low initial levels of HCG ✓ (4)

2.7. To prove that the test is functional ✓ (1)

2.8. Graph A ✓ (1)

2.9. C (oestrogen) thickens the endometrium ✓

E (LH) causes ovulation/forming of corpus luteum ✓ (2)

2.10. LH & FSH/pituitary hormones stimulate the release of ovarian hormones/ Oestrogen & Progesterone ✓✓ → amount of oestrogen & progesterone in blood feeds back to pituitary gland ✓ → which causes the pituitary to stop/reduce the release of FSH & LH ✓ (4)

2.11.

✓ for low levels at start of cycle/graph

✓ for a higher level that **does not drop** at the end of the cycle



(2)

2.12. 1st stage: contractions start/ water breaks/ cervix starts to dilate ✓

2nd stage: 'active' labour/ foetus moves through birth canal/ umbilical cord cut & clamped ✓

3rd stage: small contractions push out placenta ✓

ONE correct characteristic of each stage (3)

2.13. Yes/No ✓ appropriate substantiation with TWO points made ✓✓

Yes ✓ one twin is significantly smaller than the other- one could have been conceived later than the other/ going off the pill could cause multiple ovulations in one cycle ✓✓

No ✓ it is not uncommon for one twin to be smaller than the other/ it is much more likely that the twins were conceived at the same time ✓✓ (3)

QUESTION 3- ESSAY

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Number of facts needed:

Source Facts for argument: 10

Source facts against argument: 4

Own knowledge facts for argument: 2

Possible Points Made:

Yes, Designer Steroids are the most dangerous and controversial

- They haven't been approved by any drug administration, so may have terrible unknown side effects
- Contributes to lawlessness- they are illicit drugs
- Some serious side effects include: strokes/blood clots/ heart disease/ liver damages
- Some other non-fatal effects: impotence/ loss of fertility in males and females
- They are often used due to fast results
- Undetectable by many urine tests, which makes it easy to use without being 'caught'

No, Erythropoetin/HGH/Testosterone/Thyroxin is more dangerous and controversial

Testosterone:

- Easily available
- Has anabolic properties

HGH:

- Many side effects- diabetes/ carpal tunnel/ fluid retention/ joint pain/ enlarged heart/ high blood pressure
- **Own knowledge:** can cause acromegaly if over used

Thyroxin:

- Easily accessible
- **Own knowledge:** hyperthyroidism/ hypothyroidism as disorders
- Side effects: rapid heart rate/ shortness of breath/ sweating/ intolerance to heat/ decreased bone density/ diarrhoea/ vomiting
- Possible death

EPO Doping:

- Drug that should not be used on healthy individuals
- Has reportedly caused 18 deaths in cycling
- Produces far too many red blood cells than normal
- Can lead to clot disorders: heart attacks/ stroke/ embolisms/ thrombosis

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