



NATIONAL SENIOR CERTIFICATE EXAMINATION  
MAY 2021

**LIFE SCIENCES: PAPER II  
MARKING GUIDELINES**

Time: 2 hours

100 marks

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**These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.**

**The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.**

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**SECTION A****QUESTION 1**

- 1.1 1.1.1 Embryo  
1.1.2 Hormone  
1.1.3 Bisexual
- 1.2 1.2.1 Pollination – transfer of pollen from anthers to stigma,  
Fertilisation – fusion of sperm from pollen with ova (egg cells in ovules)  
in ovary
- 1.2.2 Table showing advantages and disadvantages of sexual and asexual reproduction

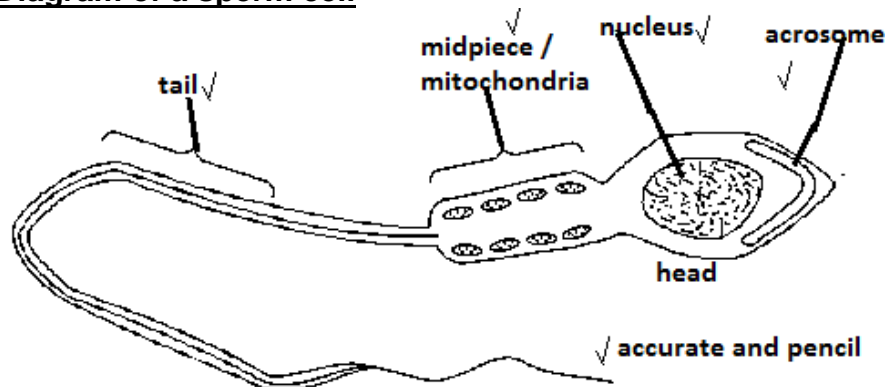
	Sexual	Asexual
Advantage	Diverse traits – new characters	Genetically stable / larger yield / shorter time to get flowering plants
Disadvantage	Diverse traits – not only favourable characteristics result / takes a long time / not all seeds viable	Genetically identical – no new characteristics susceptible to disease etc.

– table format

- 1.2.3 Two different varieties of orchids produce offspring that inherit different characters from each parent. / It is random as to which combinations of characters they will inherit. / unsure of specific phenotypes that will arise in offspring  
*Accept other suitable explanations.*
- 1.3 1.3.1 5  
1.3.2 4  
1.3.3 3  
1.3.4 2
- 1.4 1.4.1 f – anther  
1.4.2 a – stigma  
1.4.3 d – ovary
- 1.5 r – produce lots of seeds
- 1.6 Polyploidy could make plants / flowers larger / bigger fruit which means more seeds therefore can charge more for them/more appealing to public etc.

**QUESTION 2**

- 2.1    2.1.1 B  
        2.1.2 A  
        2.1.3 C  
        2.1.4 D
- 2.2    2.2.1 Cheap  
          Effective  
          Protect from STD's  
          Easy to use
- 2.2.2 Heading  
          Accurate shape and drawn in pencil  
          Any 3 accurate labels

**Diagram of a sperm cell**

Mark any 3 labels

- 2.3    100% – 98% = 2% ;  
        2% × 10 000 = 200
- 2.4    2.4.1 1  
        2.4.2 3  
        2.4.3 5  
        2.4.4 2  
        2.4.5 4
- 2.5    2.5.1 Sperm needs to move past cervix into the uterus/barrier to sperm to  
          get to Fallopian tubes to fertilise an ovum/entering the  
          cervix/preventing fertilisation.
- 2.5.2 Women could be in control of spacing their pregnancies and  
          contraception, they were not burdened by unwanted pregnancies
- 2.6    (Very little Injected testosterone enters testes/ it continues to circulate in  
          blood)/ blood levels of testosterone remain high reaches hypothalamus /  
          pituitary, therefore high testosterone levels inhibit normal release of  
          testosterone, therefore less reaches testes / less sperm made.  
          High testosterone levels inhibits LH (ICSH) and FSH – therefore less  
          stimulation of interstitial cells to release testosterone
- 2.7    B

**SECTION B****QUESTION 3**

<b>Yes – doping should be legalised</b>	<b>No – doping should not be legalised</b>
<b>SOURCE A</b> Performance enhancing drugs have been used for a long time Many of these drugs are natural hormones	<b>SOURCE A</b> Certain performance enhancing drugs are very dangerous
<b>SOURCE B</b> Excellence in performance	<b>SOURCE B</b> Respect for laws and rules Dedication and commitment Fair play and honesty Courage community and solidarity Respect for self and other participants Promotions of health Excellence in performance
<b>SOURCE C</b> Drugs used for other ailments – why not for sport Drugs used in the same way as supplements Biological manipulation embodies the human spirit – the capacity to improve ourselves on the basis of reason and judgment Levels playing field – prevents people with best genetics from always winning Musicians use drugs to help performing	<b>SOURCE C</b> Unfair advantage over other athletes Endanger health Encourage others to endanger health Unfair if winning is due to a drug For athletes who want to compete clean, the threat that they may be beaten by a competitor who is not faster, stronger, or more dedicated, but who takes a drug to gain the edge, is profoundly personal. Performance-enhancing drugs affect the individual athlete psychologically We expect the winning athlete to combine natural talents with effort, training, and technique. Natural talents should be respected for what they are Courage, strength, competitiveness, and other virtues demand moral admiration. Equipment, coaching, and nutrition contribute to success but don't induce the same appreciation Takes away sport for the love of sport
<b>SOURCE D</b> Prohibition forced banning of alcohol – didn't work,/ available illegally/, unsafe as unregulated,/ deaths increased,/ corruption increased (only accept max 2 marks from this source)	<b>SOURCE D</b>
<b>SOURCE E</b> Training at altitude / using hypoxic machines legal, but expensive, while EPO is cheap Genetics makes contestants different – doping will remove these differences	<b>SOURCE E</b> Genetics is natural
<b>SOURCE F</b>	<b>SOURCE F</b> Will pressure athletes into taking substances Risk of stroke / heart attack using EPO Sports events determined by whose body responds best to chemicals Training is active Most ambitious person would be most reckless Effects of testosterone
<b>SOURCE G</b> Athletes need supplements to perform in modern sport Technology already present to aid sportsmen (2 examples)	<b>SOURCE G</b>
<b>SOURCE H</b> Top athletes caught doping – but still good	<b>SOURCE H</b>
<b>OWN</b> Drugs only enhance physical attributes, athlete still relying on natural ability	<b>OWN</b> Hormones can affect other non-target regions (have many different effects) Growth hormones – tumour forming How to distinguish between normal and raised levels of these hormones as they occur naturally in the body Creates unfair economic barriers – wealthy can afford technology/supplements; poor rely on natural ability

**Total: 100 marks**