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**KWAZULU-NATAL PROVINCE**

**EDUCATION**  
REPUBLIC OF SOUTH AFRICA

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**LIFE SCIENCES**  
**APRIL 2021 COMMON TEST**  
**MARKING GUIDELINE**

**MARKS: 60**

**This marking guideline consists of 6 pages.**

**PRINCIPLES RELATED TO MARKING LIFE SCIENCES**

- 1. If more information than marks allocated is given**  
Stop marking when maximum marks is reached and put a wavy line and 'max' in the right-hand margin.
- 2. If, for example, three reasons are required and five are given**  
Mark the first three irrespective of whether all or some are correct/incorrect.
- 3. If whole process is given when only a part of it is required**  
Read all and credit the relevant part.
- 4. If comparisons are asked for, but descriptions are given**  
Accept if the differences/similarities are clear.
- 5. If tabulation is required, but paragraphs are given**  
Candidates will lose marks for not tabulating.
- 6. If diagrams are given with annotations when descriptions are required**  
Candidates will lose marks.
- 7. If flow charts are given instead of descriptions**  
Candidates will lose marks.
- 8. If sequence is muddled and links do not make sense**  
Where sequence and links are correct, credit. Where sequence and links are incorrect, do not credit. If sequence and links become correct again, resume credit.
- 9. Non-recognised abbreviations**  
Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation, but credit the rest of the answer if correct.
- 10. Wrong numbering**  
If answer fits into the correct sequence of questions, but the wrong number is given, it is acceptable.
- 11. If language used changes the intended meaning**  
Do not accept.
- 12. Spelling errors**  
If recognisable, accept the answer, provided it does not mean something else in Life Sciences or if it is out of context.
- 13. If common names are given in terminology**  
Accept, provided it was accepted at the national memo discussion meeting.
- 14. If only the letter is asked for, but only the name is given (and vice versa)**  
Do not credit.

**15. If units are not given in measurements**

Candidates will lose marks. Memorandum will allocate marks for units separately.

**16. Be sensitive to the sense of an answer, which may be stated in a different way.****17. Caption**

All illustrations (diagrams, graphs, tables, etc.) must have a caption.

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

- |     |       |                            |         |            |
|-----|-------|----------------------------|---------|------------|
| 1.1 | 1.1.1 | C✓✓                        |         |            |
|     | 1.1.2 | D✓✓                        |         |            |
|     | 1.1.3 | B✓✓                        |         |            |
|     |       |                            | (3 x 2) | <b>(6)</b> |
|     |       |                            |         |            |
| 1.2 | 1.2.1 | Template✓                  |         |            |
|     | 1.2.2 | DNA profile✓               |         |            |
|     | 1.2.3 | mRNA✓                      |         |            |
|     | 1.2.4 | External✓ fertilisation    |         |            |
|     |       |                            | (4 x 1) | <b>(4)</b> |
|     |       |                            |         |            |
| 1.3 | 1.3.1 | B only✓✓                   |         |            |
|     | 1.3.2 | A only✓✓                   |         |            |
|     | 1.3.3 | A only✓✓                   |         |            |
|     |       |                            | (3 x 2) | <b>(6)</b> |
|     |       |                            |         |            |
| 1.4 | 1.4.1 | DNA✓                       |         | (1)        |
|     | 1.4.2 | -Double stranded✓          |         |            |
|     |       | -Weak hydrogen bonds       | Any     | (1)        |
|     | 1.4.3 | - Nucleus✓                 |         | (2)        |
|     |       | - Mitochondrion✓           |         | (4)        |
|     |       | <b>Mark first TWO only</b> |         |            |

**TOTAL SECTION A: 20****SECTION B****QUESTION 2**

- |     |       |  |  |     |
|-----|-------|--|--|-----|
| 2.1 | 2.1.1 | CGU✓   |  | (1) |
|     | 2.1.2 | Brings required amino acids✓ to the ribosomes✓ to form the required proteins |  | (2) |
|     | 2.1.3 | 585 x 3✓ = 1755✓   |  | (2) |
|     | 2.1.4 | (a) Cysteine✓  |  | (1) |
|     |       | (b) Aspartic acid✓   |  | (1) |

- 2.1.5
- The double helix DNA unwinds✓
  - The double-stranded DNA unzips✓/weak hydrogen bonds break
  - to form two separate strands✓
  - One strand is used as a template✓
  - to form mRNA✓
  - using free RNA nucleotides✓ from the nucleoplasm
  - The mRNA is complementary to the DNA✓
  - mRNA now has the coded message for protein synthesis✓

Any (6)  
(13)

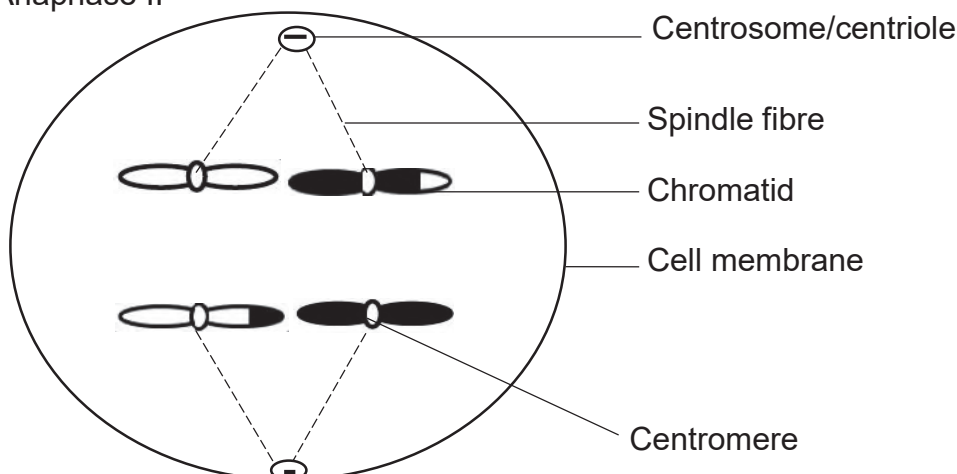
2.2 2.2.1 Telophase II✓

(1)

- 2.2.2
- Crossing over✓
  - Random arrangement✓
- (Mark first TWO only)**

(2)

2.2.3 Anaphase II



Marking criteria:

Caption	1
Correct type of diagram with the correct shading and correct position (4 chromatids arranged correctly)	1
Any two correct labels	2

(4)  
(7)

**[20]**

**QUESTION 3**

- |                         |       |  |     |                           |
|-------------------------|-------|--|-----|---------------------------|
| 3.1                     | 3.1.1 | High amounts of progesterone✓  |     | (1)                       |
|                         | 3.1.2 | - All healthy females✓<br>- No pregnant females✓<br>- Age✓<br><b>(Mark first TWO only)</b>   | Any | (2)                       |
|                         | 3.1.3 | - To serve as control✓<br>- so that it can be compared with group A✓<br>- It shows that progesterone is the only factor that affects the results✓/<br>improves validity of the investigation   | Any | (2)                       |
|                         | 3.1.4 | - High amounts of progesterone✓ in the blood<br>- inhibited FSH production✓  |     | (2)<br><b>(7)</b>         |
| 3.2                     | 3.2.1 | (a) Testes✓<br>(b) Epididymis✓   |     | (1)<br>(1)                |
|                         | 3.2.2 | 562✓   |     | (1)                       |
|                         | 3.2.3 | As the age increases, the testosterone level in the blood of males decreases✓✓   |     | (2)                       |
|                         | 3.2.4 | - No spermatogenesis will occur✓<br>- therefore, semen produced will have no sperm cells✓<br>- to fertilise the ovum✓  | Any | (2)<br><b>(7)</b>         |
| 3.3                     |       | - Under the influence of FSH✓<br>- diploid cells✓/germinal epithelial cells<br>- in the ovary<br>- undergo mitosis✓<br>- to form numerous follicles✓<br>- One cell inside a follicle enlarges and undergoes meiosis✓<br>- Of the four cells that are produced, only one survives to form a mature, haploid ovum✓ | Any | <b>(6)</b><br><b>[20]</b> |
| <b>TOTAL SECTION B:</b> |       |  |     | <b>40</b>                 |
| <b>GRAND TOTAL:</b>     |       |  |     | <b>60</b>                 |