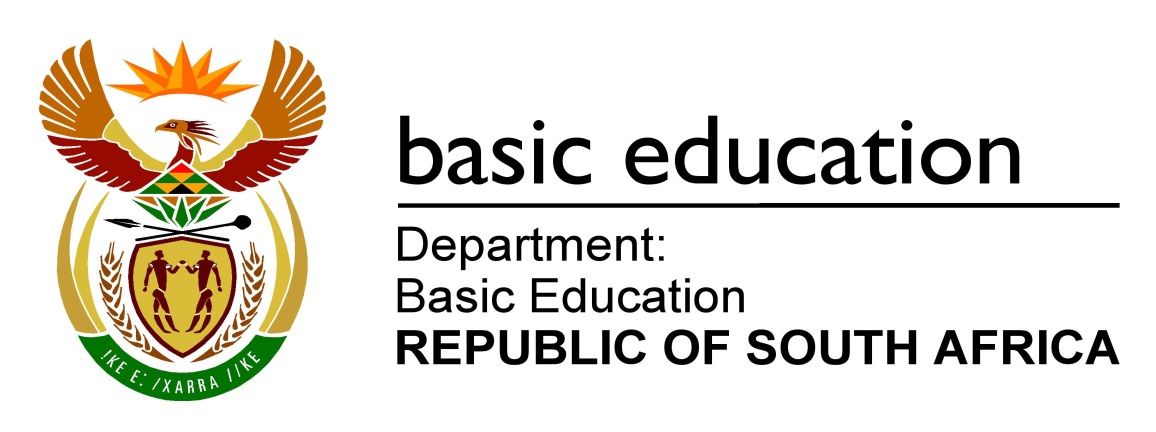
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# **NATIONAL**

# **SENIOR CERTIFICATE**

# **GRADE 12**

# **LIFE SCIENCES P1**

**NOVEMBER 2018**

# **MARKING GUIDELINES**

# **MARKS: 150**

**These marking guidelines consist of 11 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.

1. **If, for example, three reasons are required and five are given**

Mark the first three irrespective of whether all or some are correct/ incorrect.

1. **If whole process is given when only a part of it is required**

Read all and credit the relevant part.

1. **If comparisons are asked for but descriptions are given**

Accept if the differences/similarities are clear.

1. **If tabulation is required but paragraphs are given**

Candidates will lose marks for not tabulating.

1. **If diagrams are given with annotations when descriptions are required**

Candidates will lose marks.

1. **If flow charts are given instead of descriptions**

Candidates will lose marks.

1. **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.

1. **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.

1. **Wrong numbering**

If answer fits into the correct sequence of questions but the wrong number is given, it is acceptable.

1. **If language used changes the intended meaning**

Do not accept.

1. **Spelling errors**

If recognisable, accept the answer, provided it does not mean something else in Life Sciences or if it is out of context.

1. **If common names are given in terminology**

Accept, provided it was accepted at the national memo discussion meeting.

1. **If only the letter is asked for but only the name is given (and vice versa)**

Do not credit.

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

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

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

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

1. **Code-switching of official languages (terms and concepts)**

A single word or two that appear(s) in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited if it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages.

1. **Changes to the memorandum**

No changes must be made to the memoranda without consulting the provincial internal moderator who in turn will consult with the national internal moderator (and the Umalusi moderators where necessary).

1. **Official memoranda**

Only memoranda bearing the signatures of the national internal moderator and the Umalusi moderators and distributed by the National Department of Basic Education via the provinces must be used.

|  |  |  |
| --- | --- | --- |
| **SECTION A** |  |  |

|  |  |  |
| --- | --- | --- |
| **QUESTION 1** |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1.1 | 1.1.1  1.1.2  1.1.3  1.1.4  1.1.5  1.1.6  1.1.7  1.1.8  1.1.9  1.1.10 | B🗸🗸  B🗸🗸  D🗸🗸  C🗸🗸  C🗸🗸  A🗸🗸  B🗸🗸  C🗸🗸  A🗸🗸  C🗸🗸 (10 x 2) |  | **(20)** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1.2 | 1.2.1 | Amniotic🗸 egg |  |  |
|  | 1.2.2 | Precocial🗸 development |  |  |
|  | 1.2.3 | Cerebellum🗸 |  |  |
|  | 1.2.4 | Choroid🗸 |  |  |
|  | 1.2.5 | Corpus callosum🗸 |  |  |
|  | 1.2.6 | Hypothalamus🗸 |  |  |
|  | 1.2.7 | Carbon dioxide🗸/CO2 |  |  |
|  | 1.2.8 | Tropisms🗸 |  |  |
|  | 1.2.9  1.2.10 | Weed-killer🗸/herbicide  Poaching🗸 |  | **(10)** |

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| --- | --- | --- | --- | --- |
| 1.3 | 1.3.1  1.3.2  1.3.3 | None🗸🗸  A only🗸🗸  Both A and B🗸🗸 (3 x 2) |  | **(6)** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1.4 | 1.4.1 | Fertilisation🗸 | |  | (1) |
|  | 1.4.2 | Mitosis🗸 | |  | (1) |
|  | 1.4.3 | * Chorion🗸 * Amnion🗸   **(Mark first TWO only)** | |  | (2) |
|  | 1.4.4 | (a)  (b)  (c) | Zygote🗸  Morula🗸  Blastocyst🗸/blastula |  | (1)  (1)  (1) |
|  | 1.4.5 | Fallopian tube🗸/oviduct | |  | (1) |
|  | 1.4.6 | 47🗸 | |  | (1)  **(9)** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1.5 | 1.5.1 | (a)  (b) | Pituitary🗸/hypophysis  Thyroxin🗸 |  | (1)  (1) |

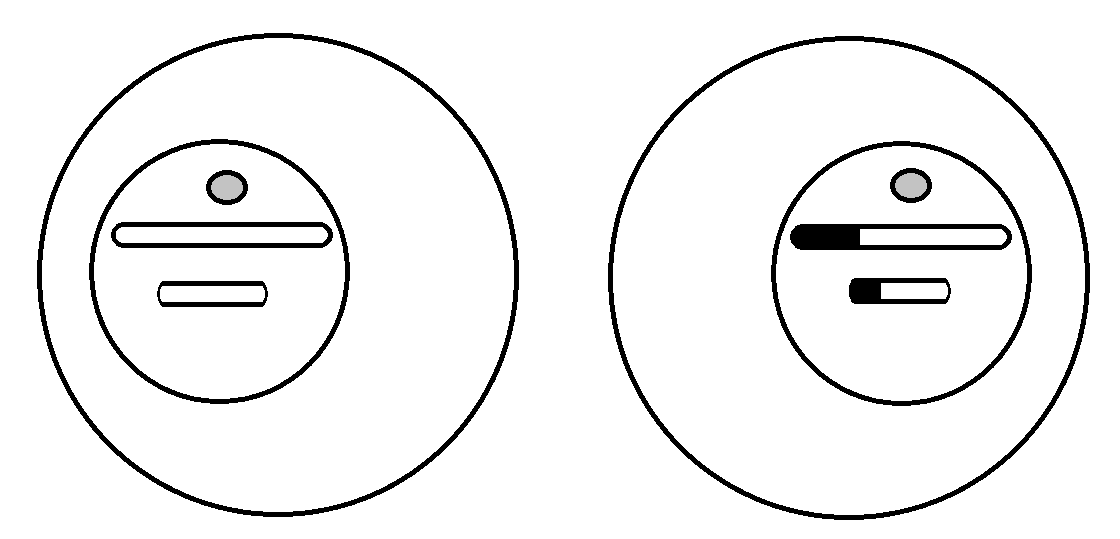
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1.5.2  1.5.3 | Negative feedback🗸 mechanism   * Less hormone B🗸/thyroxin will be secreted * More hormone A🗸/TSH will be secreted   **(Mark first TWO only)** |  | (1)  (2)  **(5)** |

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| **Total Section A:** |  | **50** |

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| **SECTION B**  **QUESTION 2** |  |  |

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| 2.1 | 2.1.1 | (a)  (b) | Prophase I🗸  Anaphase I🗸 |  | (1)  (1) |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2.1.2 |  |  |  |



cell membrane

chromosome

cytoplasm

nucleolus

nuclear membrane

nucleoplasm

nucleus

**Criteria for marking**

|  |  |
| --- | --- |
| Two cells have been drawn (**D**) | 1 mark |
| Each cell contains two un-replicated chromosomes (**C**) | 1 mark |
| Each chromosome is the correct size and correctly shaded (**S**) | 1 mark |
| Any TWO correct labels (**L**) | 2 marks |

|  |  |  |  |  |  |
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|  |  |  |  |  | (5)  **(7)** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2.2 | 2.2.1  2.2.2  2.2.3  2.2.4  2.2.5 | * Needed for spermatogenesis🗸/simulates the maturation of sperm cells * Stimulates the development of secondary male characteristics🗸   **(Mark first ONE only)** Any   * Administering testosterone🗸/hormonal treatment * Surgery🗸   **(Mark first TWO only)**  33⅓🗸/33,3%  It increases the risk of testicular cancer🗸  **(Mark first ONE only)**     * The temperature of the testes will be too high🗸/not lower than body temperature * therefore spermatogenesis will not occur🗸/sperm will not mature |  | (1)  (2)  (1)  (1)  (2)  **(7)** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2.3 | 2.3.1  2.3.2  2.3.3  2.3.4  2.3.5  2.3.6 | To calculate BMI🗸  41/100🗸 x 1510🗸 = 619🗸 (Accept 619,1)  Only women with planned pregnancies will know how long it took them to fall pregnant🗸🗸  All the women:   * were between the ages of 20 and 30 years🗸 * were at least 20 weeks pregnant🗸 * had planned to fall pregnant🗸 * had conceived naturally🗸   **(Mark first ONE only)** Any  Do not smoke if your BMI is <20 and ≥30🗸🗸  OR  Maintain a BMI between 20 and 29.9🗸🗸   * The investigation was repeated🗸 * And very similar/the same results were obtained🗸 |  | (1)  (3)  (2)  (1)  (2)  (2)  **(11)** |

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| --- | --- | --- | --- | --- | --- |
| 2.4 | 2.4.1  2.4.2 | (a)  (b)  (c)  (a)  (b) | Transmits sound waves to the tympanic membrane🗸/Secretes ear wax  Equalises pressure on either sides of the tympanic membrane🗸  Releases pressure from the inner ear🗸Prevent echoes in the ear  C🗸  D🗸 |  | (1)  (1)  (1)  (1)  (1) |
|  |  |  |  |  |  |
|  | 2.4.3  2.4.4  2.4.5 | * When damaged the receptors cannot convert the stimuli into impulses🗸 * No impulses/fewer impulses are transmitted to the brain🗸/cerebrum * and the person does not hear anything🗸/hearing is impaired * The ossicles transmit the vibrations🗸 * from the large tympanic membrane🗸 * to the smaller oval window🗸 * which concentrates the vibrations🗸, amplifying them. Any * A change in speed/direction of movement🗸 * stimulates the cristae🗸 in the semi-circular canals * The stimulus is converted to an impulse🗸 * The impulse is transmitted to the cerebellum🗸 * via the auditory nerve🗸 * The cerebellum sends impulses to the muscles to restore balance🗸 Any | |  | (3)  (3)  (4)  **(15)**  **[40]** |

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| QUESTION 3 |  |  |

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| --- | --- | --- | --- | --- |
| 3.1 | 3.1.1  3.1.2  3.1.3  3.1.4 | Auxins🗸  (a) Light🗸  (b) Gravity🗸  Plant structure **B** has bent towards the light🗸/towards **A/positive phototropic**   * Auxins accumulated on the lower side of the root🗸 * The high concentration of auxins on the lower side of the root inhibits growth🗸 * The lower concentration of auxins on the upper side stimulates growth🗸 * causing uneven growth🗸/the root to bend downwards Any |  | (1)  (1)  (1)  (1)  (3)  **(7)** |

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| --- | --- | --- | --- | --- |
| 3.2 | 3.2.1  3.2.2  3.2.3  3.2.4  3.2.5  3.2.6  3.2.7 | A🗸  The impulse does not travel to the brain🗸/goes directly from receptor to effector via the spinal cord/interneuron is involved   * Allows the person to respond rapidly🗸 * and without thinking🗸/involuntarily * to an external stimulus🗸 * to prevent damage to the body🗸 Any   Spinal cord🗸/nerve   * It acts as an insulator🗸 * and therefore speeds up the nerve impulse🗸/prevents a short circuit * The person would be able to feel the stimulus🗸 * but would be unable to react🗸 * The receptor receives the stimulus🗸 * and converts it into an impulse🗸 * which is transported via a sensory neuron🗸 * to the spinal cord🗸 * The spinal cord carries the impulse to the cerebrum🗸 * which interprets the stimulus🗸 * The cerebrum sends an impulse to a motor neuron🗸 * which conducts the impulse to the effector🗸 * to bring about a response🗸 Any |  | (1)  (1)  (3)  (1)  (2)  (2)  (6)  **(16)** |

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| 3.3 | 3.3.1  3.3.2  3.3.3 | The level increases🗸  🗸   |  |  | | --- | --- | | **Fewer larger meals** | **More smaller meals** | | 1. Maximum blood insulin is higher/more than  160 mg/dl🗸 | 1. Maximum blood insulin is lower/around 120 mg/dl🗸 | | 1. Blood insulin rises and falls three times a day🗸/less often | 1. Blood insulin rises and falls six times a day🗸/more often | | 1. The difference between the maximum and minimum insulin levels in the blood is large🗸 | 1. The difference between the maximum and minimum insulin levels in the blood is small🗸 | | 1. Minimum blood insulin is very low🗸/30 mg/dl | 1. Minimum blood insulin is higher🗸/40 mg/dl |   **(Mark first TWO only)** 1+ Any 2 x 2     * A diabetic may not produce sufficient insulin🗸 * When eating many smaller meals, less glucose🗸 * enters the blood after each meal🗸 * Less insulin is needed to return blood glucose to normal🗸 |  | (1)  (5)  (4)  **(10)** |

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| 3.4 | 3.4.1  3.4.2  3.4.3  3.4.4 | B🗸  - The person is sweating🗸  - Vasodilation has occurred🗸/Blood capillaries are dilated  **(Mark first TWO only)**  Adrenalin🗸  - Person **A** is not sweating🗸/sweating less  - therefore there is no/little evaporation of water from the skin🗸  - and no/less cooling occurs🗸 |  | (1)  (2)  (1)  (3)  **(7)** |
|  |  |  |  | **[40]** |

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|  |  | **TOTAL SECTION B:** |  | **80** |

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| QUESTION 4  The causes of rapid global warming   * The concentration of greenhouse gases in the atmosphere has increased🗸 * The burning of fossil fuels🗸/industrialization/use of vehicles * has released large amounts of CO2🗸/SO2/NO into the atmosphere * Deforestation🗸 * results in less CO2 being removed from the atmosphere🗸 * The concentration of methane in the atmosphere has increased🗸 * due to the decomposition of organic waste in landfills🗸/rice paddies * and the increased number of livestock🗸 * This has caused the enhanced greenhouse effect🗸 * More heat is trapped in the atmosphere🗸 * resulting in rising global temperatures🗸 Any   Impact of global warming on weather patterns   * Higher temperatures causes more evaporation of water🗸 * The distribution of rainfall changes🗸 * leading to increased rainfall in some areas🗸 * while other areas will experience droughts🗸 * Storms are more severe🗸 Any   How changes in weather patterns affects food security   * Food security would decrease🗸 * Crops will no longer grow well at the higher temperatures🗸 * and changed/higher/ lower amount of rainfall🗸 * Wildfires🗸 from dry conditions * and floods🗸 from high rainfall * result in the destruction of crops🗸 * or prevents crops being planted🗸 * Floods/wind erode the soil making it less fertile🗸/fewer crops can be grown * and decrease the amount of farmland available to grow crops🗸 * The loss in biodiversity results in less food being available🗸 Any   Content:  Synthesis: |  | (8)  (3)  (6)  (17)  (3)  **(20)** |

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| --- | --- | --- |
| **ASSESSING THE PRESENTATION OF THE ESSAY** |  |  |

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| --- | --- | --- |
| **Relevance** | **Logical sequence** | **Comprehensive** |
| All information provided is relevant to the question | Ideas arranged in a logical/ cause-effect sequence | Answered all aspects required by the essay in sufficient detail |
| All the information provided is relevant to:   * The causes of rapid global warming * The impact of global warming on weather patterns * How changing weather patterns affect food security   There is no irrelevant information | All the information regarding the:   * The causes of rapid global warming * The impact of global warming on weather patterns * How changing weather patterns affect food security   Is arranged in a logical manner. | At least the following points should be included:   * The causes of rapid global warming (5/8) * The impact of global warming on weather patterns (2/3) * How changing weather patterns affect food security (4/6) |
| 1 mark | 1 mark | 1 mark |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **TOTAL SECTION C:** |  | **20** |
|  |  | **GRAND TOTAL:** |  | **150** |