# LIFE SCIENCES Grade 12

|  |  |
| --- | --- |
| **Total** |  |
|  | **50** |

**Assignment Term 3 2023**

**Marking Guideline**

**QUESTION 1**

|  |  |  |
| --- | --- | --- |
| 1.1 | *Archaeopteryx* shows characteristics of *Velociraptor*✓/ dinosaurs and *Yanornis* ✓/birds | (2) |
|  |  |  |
| 1.2 | (a) Teeth✓/long bony tail/ wing claws  (b) Feathers✓/wishbone or furcula/ wings | (1)  (1) |
|  |  | **(4)** |

**QUESTION 2**

|  |  |  |
| --- | --- | --- |
| 2.1 | * Certain types of plastics✓ * Crop fertilizers✓ * Synthetic and natural oestrogen ✓   **Mark first TWO only** Any | (2) |
|  |  |  |
| 2.2 | At night✓ | (1) |
|  |  |  |
| 2.3 | To attract females for mating✓ | (1) |
|  |  |  |
| 2.4 | * The higher the concentration of oestrogen the shorter the call duration of the frogs ✓✓   **OR**   * The lower the concentration of oestrogen the longer the call duration of the frogs ✓✓   **Mark the first ONE only** Any | (2) |
|  |  |  |
| 2.5 | * They would be less likely to attract females ✓ * and reproduction rate would decrease ✓ | (2) |
|  |  | **(8)** |

**QUESTION 3**

|  |  |  |
| --- | --- | --- |
| 3.1 | Organisms that are able to interbreed and produce fertile offspring. ✓ | (1) |
| 3.2 | * The population of the ancestral species of anoles became separated by **the sea** 🗸\*/onto different islands. * and split into different populations.🗸 * There was no gene flow between the different populations.🗸 * Since each population was exposed to different environmental conditions 🗸/the selective pressure was different * natural selection occurred independently 🗸 in each of the populations * such that the individuals of the different populations became very   different 🗸 from each other   * genotypically and phenotypically.🗸 * Even if the populations were to mix again 🗸 * they would not be able to interbreed 🗸 * The six populations are now different species.   **1\* Compulsory mark +** Any 5 | (6) |
|  |  |  |
| 3.3 | * All the male anoles had small dewlaps ✓ originally. * The male anoles frequently displayed ✓their dewlaps, * to attract females to reproduce ✓/establish their territory. * According to Lamarck’s law of use and disuse✓ * The dewlaps became larger✓ * The larger dewlaps were passed on to the next generation✓ * according to his law of inheritance of acquired characteristics✓ * This is why all the male anoles had a large dewlap. Any | (4) |
|  |  |  |
| 3.4 | * Breeding at different times of the year 🗸 * Species-specific courtship behaviour 🗸 * Infertile offspring 🗸 * Prevention of fertilisation 🗸   **Mark the first TWO only** | (2) |
|  |  | **(13)** |

# QUESTION 4

|  |  |  |
| --- | --- | --- |
|  | * There is variation in genes for heamoglobin formation✓ in the population * Some have the allele for sickle cell trait✓ * and some have the allele for normal haemoglobin✓ * Individuals with sickle cell trait are resistant to malaria✓ * They are more likely to survive and reproduce✓ * They pass the allele for sickle cell trait/ recessive allele onto their offspring✓ * Over time sickle cell trait is more prevalent✓ in the population   Any | **(5)** |
|  |  |  |

# QUESTION 5

|  |  |  |
| --- | --- | --- |
| 5.1 | The selective breeding of organisms to achieve a desirable phenotype ✓ /characteristic/trait | (1) |
|  |  |  |
| 5.2 | (a)   * Hard-working✓ * Highly alert ✓ * Intelligent ✓ * Hardy ✓ * Agile ✓/able to move quickly and easily   **Mark first ONE only** Any | (1) |
|  | (b)   * Small-to-mid-sized ✓ * Loyal ✓ * Loving ✓   **Mark first ONE only** Any | (1) |
|  |  |  |
| 5.3 | * Harmful traits can become more common in future generations✓ of the Icelandic Sheepdog breed * as the gene pool becomes limited✓ | (2) |
|  |  |  |
| 5.4 | * Characteristics that are desirable/beneficial to humans ✓ are being selected * The characteristics are chosen by humans ✓/ it is an artificial process * It is not necessarily beneficial for the organism ✓   **Mark first TWO only** Any | (2) |
|  |  | **(7)** |

|  |  |  |
| --- | --- | --- |
| **QUESTION 6** | | |
| 6.1 | (a) Year✓  (b) Antibiotic resistance (%)✓ in three types of bacteria | (1)  (1) |
|  |  |  |
| 6.2 | The study was conducted over a 20 year period✓ | (1) |
|  |  |  |
| 6.3 | (a) VRE✓  (b) FQRP✓ | (1)  (1) |
|  |  |  |
| 6.4 | 60 x 100  105 ✓  = 57,1 ✓% | (2) |
|  |  |  |
| 6.5 |  | |
|  |  |  |
|  | |  |  | | --- | --- | | **Criteria** | **Mark allocation** | | Correct type of graph (line graph) **(T)** | 1 | | Title of graph including both  variables **(C)** | 1 | | Correct scale of the X and Y-axis **(S)** | 1 | | Correct label of the X and Y-axis including units **(L)** | 1 | | Plotting of points **(P)** | 1: 1 to 5 points  correctly plotted  2: all 6 points  correctly plotted | | (6)  **(13)** |
|  |  | **[50]** |

**Assignment Term 3**

**Weighting: Practical Skills**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Practical Skills** | | | | | | |
| **Follow instructions** | **Handle equipment** | **Make observations** | **Draw a diagram** | **Calculation** | **Interpret** | **Design/Plan** |
| ✓ |  | ✓ | ✓ | ✓ | ✓ | ✓ |

**Weighting: Cognitive Levels & Levels of Difficulty**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Question** | **Cognitive Levels** | | | | **Levels of Difficulty** | | | |
| **Level A**  **Knowledge** | **Level B**  **Understanding** | **Level C**  **Application** | **Level D**  **Evaluate, analyse & synthesize** | **Easy** | **Medium** | **Difficult** | **Very difficult** |
| 1.1 |  | 2 |  |  |  | 2 |  |  |
| 1.2 (a) |  | 1 |  |  | 1 |  |  |  |
| 1.2 (b) |  | 1 |  |  | 1 |  |  |  |
| 2.1 |  | 2 |  |  |  | 2 |  |  |
| 2.2 |  | 1 |  |  | 1 |  |  |  |
| 2.3 |  |  | 1 |  |  | 1 |  |  |
| 2.4 |  |  |  | 2 |  |  | 2 |  |
| 2.5 |  |  |  | 2 |  |  |  | 2 |
| 3.1 | 1 |  |  |  | 1 |  |  |  |
| 3.2 | 4 |  | 2 |  |  | 6 |  |  |
| 3.3 |  |  | 4 |  |  | 4 |  |  |
| 3.4 | 2 |  |  |  |  | 2 |  |  |
| 4 |  |  | 5 |  |  |  | 5 |  |
| 5.1 | 1 |  |  |  | 1 |  |  |  |
| 5.2 (a) |  | 1 |  |  | 1 |  |  |  |
| 5.2 (b) |  | 1 |  |  | 1 |  |  |  |
| 5.3 |  |  | 2 |  |  |  | 2 |  |
| 5.4 |  |  | 2 |  | 2 |  |  |  |
| 6.1 (a) |  |  |  | 1 |  |  |  | 1 |
| 6.1 (b) |  |  |  | 1 |  |  |  | 1 |
| 6.2 |  |  | 1 |  |  |  | 1 |  |
| 6.3 (a) |  | 1 |  |  | 1 |  |  |  |
| 6.3 (b) |  | 1 |  |  | 1 |  |  |  |
| 6.4 |  | 2 |  |  |  | 2 |  |  |
| 6.5 | 1 | 3 | 2 |  |  | 6 |  |  |
| **Total** | **9** | **16** | **19** | **6** | **11** | **25** | **10** | **4** |
| **Percentage** | **18** | **32** | **38** | **12** | **22** | **50** | **20** | **8** |