# 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 plotted2: 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** |