Classification and evolution – 2021/20 GCE AS Biology A

1. Nov/2021/Paper-H020/01/No.16

The harlequin ladybird, *Harmonia axyridis*, has many different distinct forms, two of which can be seen below.

Which of the terms, **A** to **D**, best describes this type of variation?

A interspecific continuous

B interspecific discontinuous

C intraspecific continuous

D intraspecific discontinuous

Your answer ☐ **[1]**

2. Nov/2020/Paper-H020/01/No.6

Antifreeze proteins are a group of globular proteins that prevent ice crystal formation in living cells. These proteins are found in four different kingdoms and have evolved independently of each other.

Which of the following phrases explains why this convergent evolution has occurred?

A adaptation to fill a similar niche

B continuous variation of these species

C interspecific variation

D the same gene occurs in these species

Your answer ☐ **[1]**

3. Nov/2020/Paper-H020/01/No.26

The table shows the characteristics of five species from the five different kingdoms.

species	organisation	nucleus	cell wall	nutrient source
Solanum tuberosum	multicellular	yes	yes	autotroph
Yersinia pestis	unicellular	no	yes	heterotroph
Cantharellus pallens	unicellular	yes	yes	saprotroph
Ministeria vibrans	unicellular	yes	no	heterotroph
Ailuropoda melanoleuca	multicellular	yes	no	heterotroph

(a) (i) Name the genus of the protoctist in the table.

..... **[1]**

(ii) Use the information in the table to determine the kingdom and cell wall molecule for *S. tuberosum* and *C. pallens*. Write your answers in the table below.

species	kingdom	cell wall molecule
S. tuberosum		
C. pallens		

[2]

(iii) Describe how the genetic material is arranged in organisms in the same kingdom as *Y. pestis*.

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..... **[1]**

(b) Explain how a specific molecule is used to show that two different species have evolved from a recent common ancestor.

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..... **[2]**