# End of topic quiz

# Topic B6: Global challenges

## Learner Activity

### Topic: B6 of J250

**Total marks: 40**

1. Antiseptics can be tested by comparing their effectiveness on a bacterial culture. **[1 mark]**

Look at the diagram below.



|  |  |  |
| --- | --- | --- |
| **A** | AB1 |  |
| **B** | AB2 |  |
| **C** | AB3 |  |
| **D** | AB4 |  |

Your answer

1. Patients with HIV are more likely to suffer from repeat infections.

This is because of a problem with a part of their blood.

Which part of their blood might be affected? **[1 mark]**

|  |  |  |
| --- | --- | --- |
| **A** | Plasma |  |
| **B** | Platelets |  |
| **C** | Red blood cells |  |
| **D** | White blood cells |  |

Your answer

1. Quadrats were used to estimate percentage cover in a grassland habitat.

The table shows the results.

|  |  |
| --- | --- |
|  | Species percentage cover (%) |
| Quadrat | Perennial rye-grass | Daisy | Dandelion | Clover |
| 1 | 84 | 3 | 2 | 12 |
| 2 | 82 | 5 | 8 | 5 |
| 3 | 75 | 8 | 12 | 10 |
| 4 | 95 | 0 | 3 | 3 |
| 5 | 93 | 1 | 3 | 4 |

What is the mean percentage cover for daisy? **[1 mark]**

|  |  |  |
| --- | --- | --- |
| **A** | 3.0% |  |
| **B** | 3.4% |  |
| **C** | 4.25% |  |
| **D** | 10.6% |  |

Your answer

1. Which infection has a causal link with cervical cancer? **[1 mark]**

|  |  |  |
| --- | --- | --- |
| **A** | Herpes simplex virus |  |
| **B** | Human immunodeficiency virus (HIV) |  |
| **C** | Human papilloma virus (HPV) |  |
| **D** | Tuberculosis |  |

Your answer

1. What is produced by lymphocytes in response to a pathogen? **[1 mark]**

|  |  |  |
| --- | --- | --- |
| **A** | Antibodies |  |
| **B** | Antigens |  |
| **C** | Phagocytes |  |
| **D** | Platelets |  |

Your answer

1. Kafue National Park is a nature reserve in Africa.

It is about the same size as the country of Wales.

The national park is home to a wide range of organisms including lions, elephants, hippos, antelope birds and tsetse flies.

Rhino have not been seen in the park since 1996.

|  |  |  |
| --- | --- | --- |
| **(a)** | **(i)** | Why is it difficult to find out the number of each species living in Kafue National Park? **[1 mark]** |
|  |  |  |
|  |  |  |  |
|  | **(ii)** | Devise a sampling technique to use to find out the number of tsetse flies in a habitat. **[3 marks]** |
|  |  |  |
|  |  |  |  |
| **(b)** | **(i)** | Nikaye is an orphaned elephant.When her herd ate villager’s crops on the edge of the national park they were chased away by the villagers.Nikaye was left behind.She was rescued and is being looked after in an elephant orphanage. When she is old enough she will be released back into Kafue National Park into an area protected by wildlife authorities.Identify a positive and a negative human interaction in this case. **[2 marks]** |
|  |  | positive....................................................................................................................................................................................................................................................negative.................................................................................................................................................................................................................................................. |
|  |  |  |  |
|  | **(ii)** | What could be a possible reason for the human-elephant conflict? **[1 mark]** |
|  |  |  |
|  |  |  |  |
|  | **(iii)** | Write down one other threat to elephants in Kafue National Park. **[1 mark]** |
|  |  |  |
|  |  |  |  |
|  | **(iv)** | What are the potential benefits to local people of increased biodiversity in the national park? **[2 marks]** |
|  |  |  |

1. Of the 56 million deaths in 2012 the World Health Organization (WHO) estimates 38 million were due to non-communicable disease (NCD).

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| --- | --- | --- |
| **(a)** |  | What percentage of deaths was due to non-communicable disease? **[1 mark]** |
|  |  |  |
|  |  |  |  |
| **(b)** |  | What is meant by ‘non-communicable disease’? **[2 marks]** |
|  |  |  |
|  |  |  |  |
| **(c)** | **(i)** | The WHO also estimates 80% of non-communicable disease could be prevented.How has an increased understanding of genetics helped prevent non-communicable disease? **[2 marks]** |
|  |  |  |
|  |  |  |  |
|  | **(ii)** | The data shows the mean alcohol intake and the probability of dying from NCD globally and for some individual countries.

|  |  |  |
| --- | --- | --- |
| **Country** | **Mean alcohol consumption per person (arbitrary units)** | **Probability of dying from NCD between age 30 and 70 (%)** |
| Egypt | 0.3 | 24.5 |
| Zambia | 4.0 | 18.3 |
| India | 4.6 | 26.2 |
| USA | 9.0 | 14.3 |
| Brazil | 9.1 | 19.4 |
| Spain | 10.6 | 10.8 |
| UK | 12.0 | 12.0 |
| Australia | 12.6 | 9.4 |
| Russia | 14.5 | 29.9 |
| *Global* | *6.3* | *19.4* |

In which country are you least likely to die from non-communicable disease? **[1 marks]** |
|  |  |  |
|  |  |  |  |
|  | **(iii)** | Does the data support that alcohol causes NCD? **[3 marks]** |
|  |  |  |

1. Crops are altered to improve yields or provide disease or herbicide resistance.

|  |  |  |
| --- | --- | --- |
| **(a)** | **(i)** | The bacterium *Agrobacterium tumafaciens* causes crown gall disease in plants.Crown gall disease is a type of cancer.What is cancer? **[2 marks]** |
|  |  |  |
|  |  |  |  |
|  | **(ii)** | How is crown gall disease spread? **[2 marks]** |
|  |  |  |
|  |  |  |  |
|  | **(iii)** | The bacteria can also be used to genetically engineer plants.Look at the diagram which shows this process.Diagram: genetically engineering plantsWhat are **A**, **B** and **C**? **[3 marks]** |
|  |  | A – B – C –  |
|  |  |  |  |
|  | **(iv)** | Outline **three** benefits of genetic engineering techniques like this one using *Agrobacterium tumerificans*.Use the information in the diagram and your own knowledge to help you. **[3 marks]** |
|  |  |  |
|  |  |  |  |
| **(b)** |  | Crops can also be altered through selective breeding.Compare the processes of selective breeding and genetic engineering. **[6 marks]** |
|  |  |  |