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Level: HL IB in Biology
Subject: Biology
Topic: IB HL Biology
Type: Mark Scheme

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All International Baccalaureate IB Topic Questions HL Biology

BIOLOGY

HL - IB

Key skills

Question 1

The correct answer is **C** because the bond that joins one nucleotide to its neighbor in a strand of DNA is a covalent bond, specifically a phosphodiester bond, not a hydrogen bond.

A is incorrect because base-pairing between strands of DNA involves hydrogen bonds.

B is incorrect because hydrogen bonds are responsible for the cohesion of water molecules.

D is incorrect because interactions between water and polar R groups involve hydrogen bonding.

Question 2

The correct answer is **D** because genetic diversity refers to the variety of genes within a population and is a key factor in preventing extinction, not causing it.

A is incorrect because habitat fragmentation reduces viable habitats for species, increasing the risk of extinction.

B is incorrect because overexploitation, such as overhunting or overfishing, directly reduces population sizes.

C is incorrect because climate change alters ecosystems and can push species beyond their tolerance limits.

Question 3

The correct answer is **C** because habitat fragmentation increases edge effects, which can negatively impact species by exposing them to external pressures like predation and habitat degradation.

A is incorrect because fragmentation generally reduces gene flow between populations.

B is incorrect because fragmentation often decreases genetic diversity by isolating populations.

D is incorrect because fragmentation tends to limit access to resources, rather than improving it.

Question 4

The correct answer is **A** because genetic diversity provides populations with a better chance to adapt to changing environments, which is crucial for long-term survival.

B is incorrect because inbreeding itself can lead to harmful mutations, not the prevention of it.

C is incorrect because gene flow between populations is essential for maintaining genetic diversity.

D is incorrect because competition exists even in genetically diverse populations and is part of natural selection.

Question 5

The correct answer is **B** because ex situ conservation, such as in zoos and botanical gardens, protects critically endangered species by removing them from immediate threats in the wild.

A is incorrect because habitat restoration is an in situ conservation strategy.

C is incorrect because ex situ environments do not typically promote natural selection.

D is incorrect because ex situ conservation often involves human management, which can be intensive.

Question 6

The correct answer is **C** because the Convention on Biological Diversity (CBD) is an international agreement dedicated to the conservation of biological diversity, the sustainable use of its components, and the fair sharing of benefits arising from genetic resources.

A is incorrect because the Kyoto Protocol deals with reducing greenhouse gas emissions.

B is incorrect because the Paris Agreement focuses on climate change mitigation, not specifically on biodiversity.

D is incorrect because the Montreal Protocol is aimed at reducing substances that deplete the ozone layer.

Question 7

The correct answer is **B** because wildlife corridors connect fragmented habitats, allowing for the movement of species between areas, which helps maintain genetic diversity and species populations.

A is incorrect because seed banks preserve plant species but do not connect habitats.

C is incorrect because breeding programs focus on captive breeding, not habitat connectivity.

D is incorrect because habitat restoration focuses on repairing damaged ecosystems but does not directly link fragmented habitats.