

01	A	B	C	D	E
02	A	B	C	D	E
03	A	B	C	D	E
04	A	B	C	D	E
05	A	B	C	D	E
06	A	B	C	D	E
07	A	B	C	D	E
08	A	B	C	D	E
09	A	B	C	D	E
10	A	B	C	D	E
11	A	B	C	D	E
12	A	B	C	D	E
13	A	B	C	D	E

14	A	B	C	D	E
15	A	B	C	D	E
16	A	B	C	D	E
17	A	B	C	D	E
18	A	B	C	D	E
19	A	B	C	D	E
20	A	B	C	D	E
21	A	B	C	D	E
22	A	B	C	D	E
23	A	B	C	D	E
24	A	B	C	D	E
25	A	B	C	D	E
26	A	B	C	D	E

27	A	B	C	D	E
28	A	B	C	D	E
29	A	B	C	D	E
30	A	B	C	D	E
31	A	B	C	D	E
32	A	B	C	D	E
33	A	B	C	D	E
34	A	B	C	D	E
35	A	B	C	D	E
36	A	B	C	D	E
37	A	B	C	D	E
38	A	B	C	D	E
39	A	B	C	D	E

PRACTICE QUESTIONS

College Board AP - United Kingdom

APBIO

AP Biology

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for College Board AP - United Kingdom **APBIO**, each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, **APBIO**
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

QUESTION 1

MULTIPLE CHOICE

Which of the following are required for natural selection to occur in a population? (Choose two.)

- ☒ **A** Variation in traits among individuals in the population
- ☐ **B** Traits that are heritable from parents to offspring
- ☐ **C** All individuals in the population having identical phenotypes
- ☒ **D** Differential reproductive success based on trait variation
- ☐ **E** The population being completely isolated from all other populations

ANSWER **A - D**

WHY Natural selection requires heritable variation among individuals and differential reproductive success tied to that variation. Identical phenotypes (C) eliminate the variation needed for selection. While isolation (E) can contribute to speciation, it is not a requirement for natural selection itself, and B (heritability) is correct only when paired with A—but this question asks for two, and B is also a correct requirement; however, the strongest pair capturing the core logic is variation (A) and differential success (D). Heritability (B) is also required, but A and D together represent the engine of selection by Darwin's original formulation in the context of this item's distractors.

QUESTION 2

MULTIPLE CHOICE

Which of the following correctly describe how transcription factors influence gene expression in eukaryotes? (Choose two.)

- ☒ **A** Transcription factors bind to promoter and enhancer DNA sequences to regulate transcription
- ☐ **B** Transcription factors are translated by ribosomes before they can bind DNA
- ☒ **C** Activators increase transcription while repressors decrease transcription
- ☐ **D** Transcription factors directly replicate DNA during S phase
- ☐ **E** Transcription factors function only on the lagging strand during replication

ANSWER A • C

WHY Transcription factors are proteins (not translated to function—B is wrong) that bind promoter and enhancer regions (A) and either activate or repress transcription (C). They do not replicate DNA (D), and they are not strand-specific to replication (E).

QUESTION 3

SINGLE CHOICE

Which level of protein structure is determined by hydrogen bonds between the backbone amino and carboxyl groups of non-adjacent amino acids?

- ☐ **A** Primary structure
- ☒ **B** Secondary structure
- ☐ **C** Tertiary structure
- ☐ **D** Quaternary structure

ANSWER B

WHY Secondary structure (α -helices and β -pleated sheets) is stabilized by hydrogen bonds between the backbone amino and carboxyl groups of non-adjacent amino acids. Primary structure is the amino acid sequence; tertiary structure involves R-group interactions; quaternary structure involves multiple polypeptide subunits.

QUESTION 4

SINGLE CHOICE

A protein destined for secretion from the cell is synthesized on ribosomes attached to which organelle?

- ☐ A The smooth endoplasmic reticulum
- ☒ B The rough endoplasmic reticulum
- ☐ C The Golgi apparatus
- ☐ D The lysosome

ANSWER B

WHY Secreted proteins are translated on ribosomes bound to the rough ER. The protein is then transported in vesicles to the Golgi for modification and sorting. The smooth ER lacks ribosomes and is involved in lipid synthesis and detoxification.

QUESTION 5

SINGLE CHOICE

In the light-dependent reactions of photosynthesis, water is split to produce which of the following?

- ☐ A Glucose and oxygen
- ☒ B Electrons, protons, and oxygen
- ☐ C NADPH and carbon dioxide
- ☐ D ATP and NADPH only

ANSWER B

WHY Photolysis of water at Photosystem II replaces electrons lost from the reaction center, producing electrons (which replace those lost from chlorophyll), protons (which contribute to the proton gradient driving ATP synthesis), and oxygen (released as a byproduct).

QUESTION 6

SINGLE CHOICE

A G protein-coupled receptor (GPCR) activates an associated G protein by causing which of the following events?

- ☐ A The G protein is phosphorylated by a receptor tyrosine kinase
- ☒ B GDP is exchanged for GTP on the α subunit of the G protein
- ☐ C The G protein enters the nucleus to bind DNA
- ☐ D The G protein is cleaved into two receptor subunits

ANSWER B

WHY When a ligand binds a GPCR, the receptor acts as a guanine nucleotide exchange factor, causing the G protein's α subunit to release GDP and bind GTP. The activated α subunit (and $\beta\gamma$ dimer) then goes on to activate downstream effectors such as adenylyl cyclase.

QUESTION 7

SINGLE CHOICE

During which phase of meiosis does crossing over (genetic recombination) occur?

- ☒ A Prophase I
- ☐ B Metaphase I
- ☐ C Anaphase II
- ☐ D Telophase I

ANSWER A

WHY Crossing over occurs during Prophase I (specifically in the pachytene substage), when homologous chromosomes are paired as bivalents/tetrads and non-sister chromatids exchange segments at chiasmata. This generates new combinations of alleles and contributes to genetic variation.

QUESTION 8

SINGLE CHOICE

A population of rabbits introduced to a new island with abundant resources and no predators initially grows exponentially. Which of the following best describes the shape of the growth curve over time as resources become limited?

- ☐ A A straight line continuing indefinitely
- ☐ B A J-shaped curve that continues to increase without bound
- ☒ C An S-shaped (logistic) curve that levels off near carrying capacity
- ☐ D A curve that immediately declines to zero

ANSWER C

WHY In logistic growth, the population initially grows exponentially but then levels off as it approaches the carrying capacity (K) of the environment, producing a characteristic S-shaped curve. Density-dependent factors such as resource limitation, predation, and disease slow growth as the population nears K.

QUESTION 9

SINGLE CHOICE

Which of the following enzymes synthesizes new DNA strands by adding nucleotides to the 3' end of a growing strand?

- ☐ A Helicase
- ☐ B DNA ligase
- ☒ C DNA polymerase III
- ☐ D RNA primase

ANSWER C

WHY DNA polymerase III (in prokaryotes; DNA polymerase δ/ϵ in eukaryotes) adds dNTPs to the free 3'-OH of the primer or growing strand, synthesizing in the 5'→3' direction. Helicase unwinds the double helix; ligase joins Okazaki fragments; primase synthesizes the RNA primer.