

Evolution — CBSE Pattern Test 2

Class 12 Biology · 90 minutes · 40 marks · Sections A–D with answer key · Narayan Gurukul Academy

Test 2 — CBSE Pattern (90 minutes, 40 marks)

Class 12 Biology · Evolution · Narayan Gurukul Academy (ClassApna)

General Instructions: (1) This paper has four sections — Section A (1×10), Section B (2×4), Section C (3×4) and Section D (5×2) — total 40 marks. Time allowed: 90 minutes.

(2) All questions are compulsory. No overall choice is given; internal choice, where allowed, is clearly marked.

(3) For MCQ questions choose the single correct option; for VSA answers write a single line.

(4) Take $g = 10 \text{ m/s}^2$. All symbols carry their usual meaning. Use of a calculator is not permitted.

Section A — MCQ & VSA ($10 \times 1 = 10$ marks)

1. Homologous organs have
 - (A) the same structure but different functions
 - (B) different structures but the same function
 - (C) the same structure and function
 - (D) no relation
2. The Hardy-Weinberg equation is
 - (A) $p^2 + 2pq + q^2 = 1$
 - (B) $p + q = 0$
 - (C) $p^2 + q^2 = 0$
 - (D) $p - q = 1$
3. Coevolution involves
 - (A) mutual evolutionary influence of species
 - (B) one species only
 - (C) no interaction
 - (D) genetic drift
4. The modern synthetic theory combines
 - (A) natural selection and genetics
 - (B) only mutation
 - (C) only selection
 - (D) only drift
5. Modern humans are
 - (A) Homo sapiens
 - (B) Homo erectus
 - (C) Neanderthals
 - (D) Australopithecus
6. Life is believed to have originated in
 - (A) water
 - (B) air
 - (C) soil
 - (D) rocks
7. Natural selection acts on
 - (A) variations

- (B) genes only
 - (C) proteins
 - (D) chromosomes
8. Reproductive isolation prevents
- (A) interbreeding
 - (B) migration
 - (C) mutation
 - (D) selection
9. What is biogenesis?
10. What is genetic drift?

Section B — Short Answer I (4 × 2 = 8 marks)

11. What is adaptive radiation?
12. Who wrote 'On the Origin of Species'?
13. What is a connecting link?
14. Name the first human-like ancestor.

Section C — Short Answer II (4 × 3 = 12 marks)

15. Differentiate between allopatric and sympatric speciation.
16. Describe the Miller-Urey experiment and its significance.
17. Explain adaptive radiation with reference to Darwin's finches.
18. Describe the major stages in human evolution.

Section D — Long Answers (2 × 5 = 10 marks)

19. (a) Explain the Hardy-Weinberg principle. (b) Describe the factors that change allele frequencies.
20. (a) Describe the various evidences of evolution. (b) Explain the modern synthetic theory of evolution.

Answer Key (Marking Scheme)

- Q1 — (A) the same structure but different functions. Q2 — (A) $p^2 + 2pq + q^2 = 1$. Q3 — (A) mutual evolutionary influence of species. Q4 — (A) natural selection and genetics. Q5 — (A) Homo sapiens. Q6 — (A) water. Q7 — (A) variations. Q8 — (A) interbreeding.
- Q9 — Biogenesis is the theory that life arises from pre-existing life.
- Q10 — Genetic drift is a random change in allele frequency in small populations.
- Q11 — Adaptive radiation is the diversification of one ancestor into many forms.
- Q12 — Charles Darwin.
- Q13 — A connecting link shows features of two groups, e.g. Archaeopteryx.
- Q14 — Homo habilis.
- Q15 — Allopatric: geographic separation; sympatric: within the same area.
- Q16 — Simple gases + electric discharge formed amino acids, supporting chemical evolution.
- Q17 — One ancestral finch diversified into many beak forms suited to different foods.

Q18 — Dryopithecus → Ramapithecus → Australopithecus → Homo habilis → Homo erectus → Neanderthal → Homo sapiens.

Q19 — (a) Allele and genotype frequencies stay constant in a large, randomly mating population. (b) Mutation, gene flow, genetic drift, non-random mating and selection.

Q20 — (a) Fossils, homologous/analogous/vestigial organs, embryology and biochemistry. (b) Natural selection combined with mutation, drift and gene flow.