Assessment schedule: practice paper 2026

AS 91605 Demonstrate understanding of evolutionary processes leading to speciation · Vertex Academy practice paper, not an NZQA paper

QUESTION ONE

Part	Evidence	Achievement (u)	Merit (r)	Excellence (t)
(a)	geographical barrier prezygotic: temporal (different flowering times) prezygotic: habitat (different altitudes or soils)	Describes allopatric speciation with a geographical barrier and no gene flow. Names and describes two prezygotic isolating mechanisms.		
(b)	orogeny glaciation divergence by selection and drift repeated cycles	Describes the mountains creating new habitats. Describes glaciers isolating populations. Describes adaptive radiation as many species evolving from one ancestor.	Explains how new habitats (different selection pressures) and glacial isolation (no gene flow) together led to many species adapted to different niches.	
(c)	hybrid: non-homologous sets chromosome doubling polyploid × parent sympatric, one generation allopatric: barrier, many generations, gradual	Describes polyploidy as having extra sets of chromosomes. Describes the hybrid as sterile. Describes allopatric speciation as needing a geographical barrier.	Explains why doubling the chromosomes makes the hybrid fertile, OR why the polyploid is reproductively isolated from its parents.	Discusses how polyploidy gives a fertile, instantly isolated new species in one generation (sympatric), AND compares it with the slow, barrier-dependent process of allopatric speciation.

QUESTION TWO

Part	Evidence	Achievement (u)	Merit (r)	Excellence (t)
(a)	stabilising directional disruptive	Describes all three types correctly, including which phenotypes are favoured.		
(b)	few founders lower diversity, different frequencies small population NZ gene pool differs from Britain's, partly by chance	Describes the founder effect as a small group starting a population. Describes genetic drift as random changes in allele frequency.	Explains that the founders carried only a random sample of alleles (lower diversity, different frequencies) AND that genetic drift had a large effect while the population was small.	
(c)	R from mutation, 1% before spraying spraying: susceptible die, resistant reproduce R 1% → 80% in 10 seasons insecticide changed gene flow from unsprayed insects	Describes R as arising by mutation. Describes resistant insects surviving and reproducing. Names directional selection.	Explains the rise of R by directional selection over generations, OR explains why R falls when the insecticide changes.	Discusses the origin of R by mutation, its rise by directional selection (with reasons for the speed), AND its slow fall when the selection pressure is removed (a cost of resistance, gene flow).

QUESTION THREE

Part	Evidence	Achievement (u)	Merit (r)	Excellence (t)
(a)	phylogeny clade convergent evolution	Describes all three terms correctly.		

(b)	mutations accumulate at a steady rate fewer base differences molecular clock mtDNA: maternal, no recombination, many copies	Describes comparing DNA base sequences. Describes fewer differences meaning a closer relationship. Describes mtDNA as inherited from the mother.	Explains that mutations accumulate over time so the number of differences shows how long ago species diverged (a molecular clock), AND why mtDNA is suitable.	
(c)	vicariance idea: one flightless Gondwanan ancestor kiwi ~ elephant birds; moa ~ flying tinamous ancestor could fly no mammal predators flightlessness evolved independently	Describes the Gondwana (vicariance) idea. Describes kiwi as closest to elephant birds or moa as closest to tinamous.	Explains that the closest relatives being on other landmasses, or able to fly, means the ancestors dispersed by flying, OR explains flightlessness as convergent evolution.	Discusses why the DNA evidence contradicts a single flightless Gondwanan ancestor, AND justifies dispersal by a flying ancestor followed by independent loss of flight (convergent evolution) under similar selection pressures.

Judgement for each question

N0	N1	N2	A3	A4	M5	M6	E7	E8
No response, or nothing relevant.	One Achievement point, partly described.	Two Achievement points.	Three Achievement points.	Four Achievement points.	One Merit point.	Two Merit points.	One Excellence point, with a minor error or omission.	One Excellence point, complete.

Grade score out of 24 (each question's grade: N0 = 0 to E8 = 8): Not Achieved 0 to 7, Achieved 8 to 13, Merit 14 to 18, Excellence 19 to 24 (the 2025 exam's cut scores).