Markscheme

TutorChase Prediction Paper

Biology

Standard level

Paper 1B

5 Pages

Question	Answers	Notes	Total
1. a	Vulnerable, Endangered and Critically Endangered (IUCN Red List); Accept abbreviations VU, EN, CR;	All three required; award 0 if incomplete or incorrect grouping.	1
1. b	Largest proportion of threatened species are in “trade requires export permits”; Smaller proportion are in “no commercial trade allowed”; A substantial minority are not protected;	Credit correct comparative statements and accurate approximate values if given (e.g., ~50%, ~20%, ~30%).	2
1. c	Any one valid reason with brief mechanism, e.g.:; Data gaps/assessment lag → species not reviewed/approved yet; Primary threat not trade (e.g., habitat loss) → not prioritised for trade controls; Identification/enforcement challenges or taxonomic uncertainty; Political/economic pressures delaying or preventing listing;	Award [2] for a reason with mechanism; Award [1] for a reason only.	2 max
1. d	Evidence from figure (any one): majority of threatened species receive some trade control; stricter controls applied to a subset;	Award one mark for any single correct statement supported by the figure.	1
1. e	Limitation beyond figure (any one): unprotected ~fraction; trade measures don’t address habitat loss/invasives/climate; enforcement/illegal trade issues; biases (charismatic groups, data availability); figure doesn’t show population outcomes;	Any one limitation beyond the data shown.	1
1. f	Judgement: a balanced conclusion, e.g., protection partly aligns with threat but is not optimal;	Judgement can be implicit if clearly argued within the evidence and limitation points.	1

Question	Answers	Notes	Total
2. a	Membrane permeability, operationalized as pigment absorbance/optical density of the bathing solution;		1
2. b	Permeability increases as ethanol concentration rises; At higher concentrations the increase becomes pronounced/approaches a plateau (credit any correct trend consistent with the plotted data);		2
2. c	Ethanol is amphipathic and intercalates into the phospholipid bilayer, disrupting hydrophobic interactions and increasing fluidity; It can denature membrane proteins and disturb tight packing, creating leaks allowing pigments/solutes to escape;		2
2. d	Any one with justification, e.g., temperature (affects membrane fluidity); disc size/surface area (affects diffusion); exposure time (affects amount leaked); tissue age/source (standardizes membrane composition);	Must include why.	1

Question	Answers	Notes	Total
3. a	Depolarization (upstroke of the action potential);		1
3. b	Threshold reached → voltage-gated Na^+ channels open → Na^+ influx → rapid depolarization; Na^+ channels inactivate; Voltage-gated K^+ channels open → K^+ efflux → repolarization; Continued K^+ efflux may cause brief hyperpolarization before resting potential is restored by leak channels/Na^+/K^+ pump;	Any three key steps in correct order.	3
3. c	No action potential upstroke would occur; the trace remains near resting potential / a graded receptor potential may occur but fails to reach threshold because Na^+ entry is blocked; Justification: TTX prevents Na^+-channel opening → no rapid depolarization → no spike;		2

Question	Answers	Notes	Total
4. a	Accept the correct stage consistent with the image (e.g., metaphase if chromosomes aligned; anaphase if separating);		1
4. b	Microtubules attach to kinetochore proteins at centromeres; Bipolar attachment aligns chromosomes at the metaphase plate; Microtubule shortening plus motor activity pulls sister chromatids to opposite poles, preventing aneuploidy;	Award any two.	2
4. c	Plants form a cell plate from Golgi-derived vesicles that fuse to create a new wall; Animals form a cleavage furrow via an actin–myosin contractile ring that pinches the membrane;		2
4. d	Count cells in mitosis (prophase→telophase) ÷ total cells observed (×100 for %) across representative fields;		1