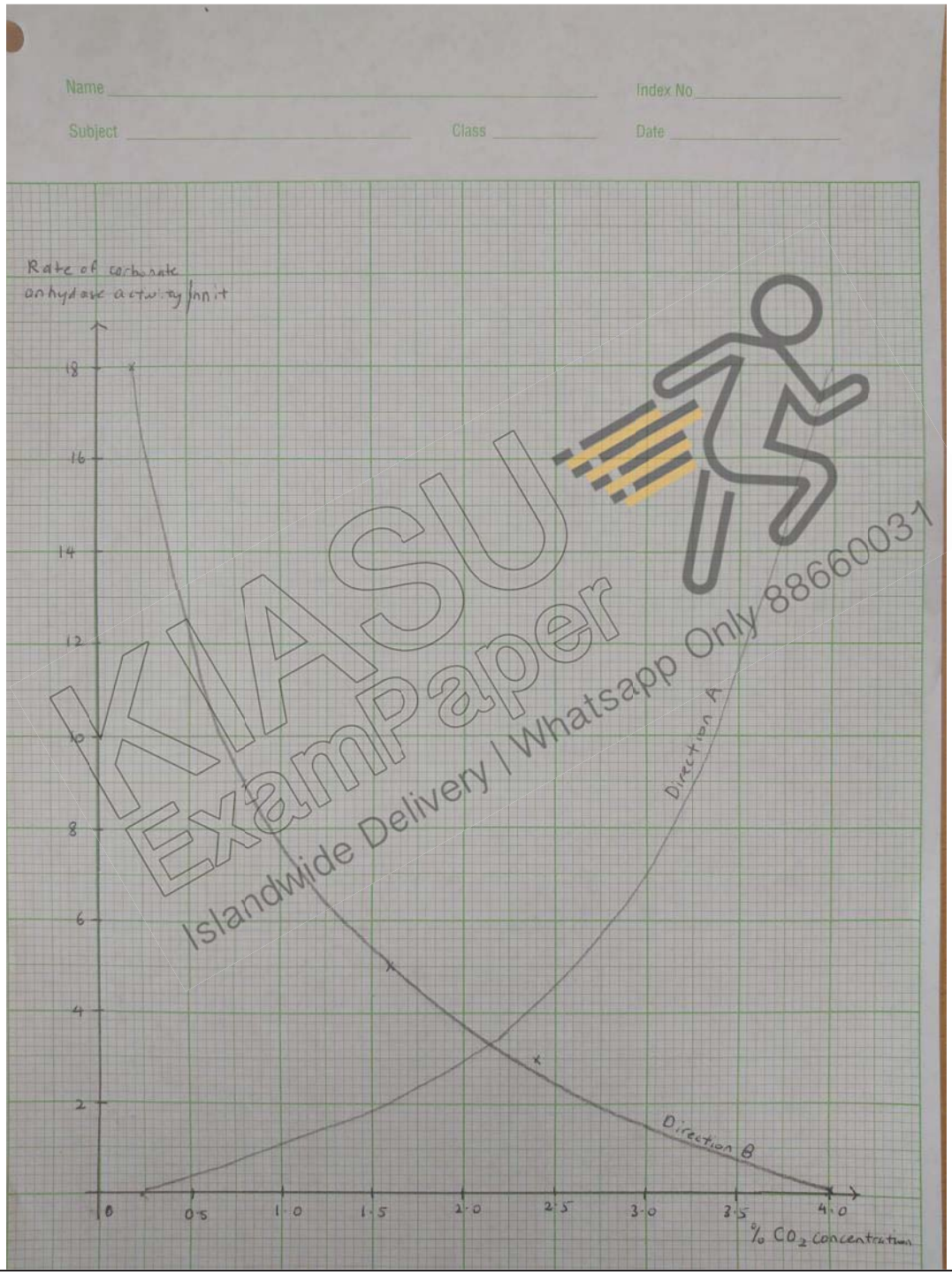
ANSWERS

1. C
2. B
3. C
4. C
5. B
6. C
7. B
8. C
9. C
10. C
11. C
12. B
13. D
14. D
15. A
16. A
17. C
18. B
19. A
20. B
21. C
22. C
23. C
24. C
25. A
26. D
27. C
28. A
29. B
30. A
31. C
32. B
33. A
34. D
35. C
36. D
37. D
38. C
39. A
40. C

Q	ANSWERS SECTION A	mark
1a	Filament correctly labelled; Sepal correctly labelled	1 1
b	Any two of: - large petals - nectar / nectar guides - brightly-coloured	2
ci	Anthers + pollen grains made and released Stigma + landing of pollen grains **(A: catch ; R: transfer)** Ripen/ Mature at different times No transfer of pollen within the flower **A:stigma situated above the anthers** **R: stigma is located far from the anther**	½ ½ ½ ½
cii	Insect/bee lands on flower/petals Reaches for/to get the nectar **(R: while eating nectar – it is the act of getting the nectar that dislodges the pollen)** Hits stamens/anthers Pollen onto his back AW/carries pollen/ref. flower of same species Hits style/stigma Stigma collects pollen from bee's back/ pollen falls onto the stigma Correct ref. older/younger flowers/ref. cross pollination/to other flower	½ ½ ½ ½ ½ ½ ½ [max 3]
2a	Codominance / codominant	1
b	Child 6 Group O and Group B parents unable to pass down the I^A allele OR There is no I^A allele in either parent	1 1
c	Parental genotypes: I^BI^O X I^BI^O Gametes: I^B, I^O, I^B, I^O Offspring genotypes: I^BI^B I^BI^O I^OI^O Offspring phenotypes: Group B and Group O	½ ½ ½ ½
3a	Less water near soil surface Less water for photosynthesis Less carbohydrate manufacture Less water for salts to be absorbed/dissolve/in cell sap Less proteins made Roots too short to reach water More herbivores eat grass Trees can lose leaves in times of stress	½ [2 max]
b	More food / vegetation in abundance Different types of habitat Less competition	½ each [1 max]
c	Longer necks Fewer of them	½ ½
d	More foliage found higher up / have to eat leaves Mutation Those with shorter necks die / do not breed Natural selection	½ each [1 max]
4a	Cleaner (ie. less particulate matter) at near body temperature (A higher temperature/warmer) More carbon dioxide less oxygen more moisture (A saturated);;; **A: cleaner** **R: high pressure**	3
b	External intercostal muscles relax Internal intercostal muscles contract Diaphragm muscles relaxes Ribs/thorax moves downwards and inwards Diaphragm domes/arches Decreased volume in thoracic cavity	½ each (Max 4)

	Increased pressure in thoracic cavity Pressure higher than that of atmosphere R: intercoastal R: wrong spellings of diaphragm, thoracic, thorax (such as diaphram, diagram, diapragm, diphragm, thoraic, thoraxic) R: diaphragm moves upwards/curves/bends R: the thoracic cavity increases	
c	There are two routes to two marks in this section: Route 1: respiration Production of carbon dioxide Removal of oxygen (A oxidation) Release of (heat) energy Release of water (R produce/generate etc) (A points on equation in words or symbols – need not be balanced) Route 2: named specific cell (eg. Red blood cell) The effect of this cell on the contents of the air in the jar; (eg. Collects/carries away AW oxygen) (Ignore refs carbon dioxide and RBCs)	2 max ½ ½ ½ ½ ½
5ai	M – fructose N – galactose	1 1
ii	Condensation reaction; When two simple molecules joined together + to form a complex large molecule With the removal of one molecule of water (R: production, release)	1 ½ ½
bi	Respiration; Glucose is the substrate for respiration (R: used)	1 1
ii	Active transport has taken place; Glucose in Q moves out against the concentration gradient	1 1
iii	Higher water potential in Q than the glucose solution outside the bag. (R: blood/ blood capillaries) Net movement of water molecules out of the bag by osmosis causing a decrease in volume of the bag. **(Movement of water MOLECULES, not water)** In P, no difference in water potential No net movement of water molecules (R: no diffusion)	½ ½ ½ ½
6a	uterine lining / endometrium **R: uterus/uterus wall / uterus lining**	1
b	Range of 7 days including Day 17 (but not at the end) Range of 7 days including Day 22 (but not at the end)	1 1
c	Bloods might be of different groups / incompatible Causing agglutination Mother's blood pressure too great Causing fine vessels like capillaries to burst Ref. possible exclusion of potentially harmful substances (eg. Pathogens, R: diseases) R: coagulation	1/2 each (Max 2)
d	Increased concentrations of oestrogen Prevent ovulation No eggs formed / mature No fertilisation able to take place **A: inhibits FSH, preventing the maturation of eggs in the ovaries**	½ ½ ½ ½
ei	29-31oC 36-38oC	1 1
ii	Develops at constant temperature compared to reptile's at a range of temperatures; Sex inherited/determined at fertilisation compared to reptile's dependence of temperatures; Ref. to sex X/Y chromosomes; Ref. external v internal development; **A: develops in egg** **R: negatives such as "don't hatch"** **R: humans give birth (no link to the production of a human)**	3

	SECTION B	
7a	1. Labelled x and y axis with units; 2. Appropriate scale for x and y axis; 3. Correctly plotted points; 4. Best-fit line/curve	4
b	Direction A graph should show opposite trend to Direction B, almost a mirror image. **R: sketches without taking into account the key points needed (without any extrapolation etc.)**  	1
ci	Direction A.	1
ii	At tissue cells, <u>respiration</u> occurs <u>Carbon dioxide</u> product of respiration carbon dioxide <u>concentration is higher</u> Carbon dioxide <u>diffuses</u> out of the cells into the <u>blood</u> where carbon dioxide concentration is <u>lower</u>	½ ½ ½ ½ ½ ½

	carbon dioxide from the blood/plasma converted to carbonic acid; Maintains a diffusion gradient for carbon dioxide to continue to diffuse from the tissue cells into the blood.	½ ½
8a	Fig. 8.1 Xylem; Strengthened/lignified/ presence of lignin/strong For support/keep firm or straight/ provide mechanical support+ correct reference to wall; Carries water + dissolved ions/salts/minerals; H/empty lumen + less resistance; (R:friction)	 1 1 1 1 1 [Max 4]
b	Fig. 8.2 Palisade mesophyll; (R: pallisade / pallisade cells) Chloroplasts + for photosynthesis/make carbohydrates; Identification of J as the cell membrane; (R: cell wall/ chloroplasts) Partially permeable + controls entry of substances into and out of cell; Water molecules + osmosis/diffuses into/out of cell; Identification of K as vacuole/cell sap; Ref. water potential/concentration difference; Ref. turgidity AW;	 1 1 1 1 1 1 1 1 [Max 6]
9Ea		6

	Hormonal	**Nervous**
Response time	Slower	Faster
Mode of transmission of signal	Blood circulatory systems	By nerves / neurones
Voluntary/Involuntary	Involuntary	Involuntary or voluntary
Length of effect	Long lasting	Short lived
Type of signal	Chemical (hormones)	Electrical and chemical (nervous impulses and neurotransmitters)
Target organ	Multiple organs	Localised (usually one organ only)

b	Oversecretion of ADH ADH increases permeability of walls/cells of collecting duct to water Large amount of / more water Reabsorbed back into the blood capillaries of kidneys (Causing the high water potential of blood)	1 1 1 1
9Oa	Urea, carbon dioxide, water, salts, toxins/broken-down hormones, bile salts/pigments	Any 3
b	Urea/water/salts/toxins/broken-down hormones + kidneys; Blood/blood vessels/named vessel/capillaries; Bladder + urine/urination; Ureter + urethra (both spelt correctly); Water/carbon dioxide + lungs/alveoli; Diffusion + from capillaries (for carbon dioxide); Breathing out; Water/salts/urea + sweat; Sweat glands; From blood capillaries; Sweat duct/pores; Ref. faeces ONLY in an explanation about how bile salts/pigments are removed	Any 7