

SECTION A

QUESTION 1

1.1

- 1.1.1 A✓✓
- 1.1.2 A✓✓
- 1.1.3 C✓✓
- 1.1.4 A✓✓
- 1.1.5 D✓✓
- 1.1.6 D✓✓
- 1.1.7 B✓✓

7 X 2 (14)

1.2.

- 1.2.1 Palisade✓
- 1.2.2 Stomata✓
- 1.2.3 Cellulose✓
- 1.2.4 Micronutrients / trace elements✓
- 1.2.5 Fat / lipid✓
- 1.2.6 Proteins✓

6 X 1 (6)

1.3

- 1.3.1 G✓✓
- 1.3.2 F✓✓
- 1.3.3 H✓✓
- 1.3.4 E✓✓
- 1.3.5 B✓✓
- 1.3.6 C✓✓

6 X 2 (12)

1.4

- 1.4.1 retinol / vitamin A✓✓
- 1.4.2 iodine✓✓
- 1.4.3 magnesium / nitrogen✓✓
- 1.4.4 ascorbic acid / vitamin C✓✓
- 1.4.5 calcium✓✓

(2)

(2)

(2)

(2)

(2)

(10)

1.5

- 1.5.1 Gaseous exchange /diffusion✓✓ (2)
- 1.5.2 (i) Carbon dioxide /CO₂✓ (1)
(ii) Oxygen /O₂✓ (1)
- 1.5.3 Increased concentration of CO₂ ✓ in the cells than in the blood as a result of cellular respiration✓ leads to establishment of a concentration gradient/slope ✓ towards the blood
- OR
- The cell is the region of higher✓ concentration of CO₂✓ than blood ✓ Any 2 X 1 (2)
- 1.5.4 Oxyhaemoglobin / solution in blood plasma ✓ (1)
- 1.5.5 - it contains haemoglobin✓
- it has a large surface area✓
- it is flexible✓

Any 1 X 1 (1)

(8)

TOTAL SECTION A: 50

SECTION B**QUESTION 2**

- 2.1.1 - egg yolk✓
 - kidney✓
 - liver✓
 - shrimps✓
 - prawns✓
 - cream✓
 - butter✓ **(Mark first TWO only)** (2)
- 2.1.2 - most people have more cholesterol than they require✓
 - since the body produces✓ enough for its functioning✓ (3)
- 2.1.3 - A high level of cholesterol in the blood encourages✓
 - the build-up of fatty deposits✓
 - in the arteries✓
 - these deposits make the flow of blood difficult✓
 - by narrowing✓ the lumen of the vessels
 - This therefore interferes with blood supply to the heart✓
 resulting in heart attacks Any 5x 1 (5)
- 2.1.4 - changes in the amount of (saturated) fat one eats✓
 - consistently high amounts of cholesterol in ones diet✓ (2)
(12)
- 2.2.1 - small intestine✓ (1)
- 2.2.2 A - muscle layers✓
 C - microvilli / brush border✓
 D - goblet cell✓ (3)
- 2.2.3 - the walls of the villi are thin✓ due to a single layer of columnar epithelium thus making diffusion✓ of substances efficient
 - it contains blood capillaries✓ to transport the products of digestion of carbohydrates and proteins✓
 - it contains lacteals✓ for the transport of the products of fat digestion✓
 - it is finger-like✓ thus increasing the surface area✓ for absorption
 - the columnar cells have numerous microvilli✓ thus increasing the surface area✓ for absorption
 - the columnar cells have numerous mitochondria✓ which produces energy for active absorption✓ Any 3 X 2 (6)

- 2.2.4 F✓ (1)
- 2.2.5 Y✓ (1)
- the flow of blood is from X to Y✓
 - as the blood flows along the capillary in the villus it absorbs glucose into the
 - capillary✓
- Any 1 x 1 (1)
- (13)**
- TOTAL QUESTION 2: 25**

QUESTION 3

- 3.1.1 30 – 5✓
= 25✓ (2)
- 3.1.2 fats✓ (2)
- 3.1.3 - Absorbs water and makes contents bulky✓✓
- Promotes peristalsis in the colon✓✓
- Decreases the period of movement of food towards caecum✓✓
- Helps prevent constipation, haemorrhoids and cancerous effects in the large intestine✓✓
- Decreases level of cholesterol in blood and thus prevents heart attack✓✓
- Any 3 X 2 (6)
- (10)**
- 3.2.1 - iodine solution✓ (1)
- 3.2.2 - the starch remained intact ✓
- because no digestion✓ took place
- since no amylase is active ✓
- Any 2 x 1 (2)
- 3.2.3 - Starch digestion occurs only in certain parts✓ of the alimentary canal
- such as in the mouth ✓
- and in the small intestine✓
- (3)
- (6)**
- 3.3.1 - Effect of light intensity✓ on the rate ✓ of photosynthesis
OR
- To determine which gas✓ is released✓ during photosynthesis
(Mark first ONE only)
- (2)
- 3.3.2 Oxygen✓ (1)
- 3.3.3 Carbon dioxide✓
Temperature✓
- (Mark first TWO answers only)** (2)

3.3.4 To provide carbon dioxide✓ needed for photosynthesis✓ (2)

- 3.3.5 - radiant energy is converted into chemical potential energy✓
and stored in organic fuel molecules like starch and glucose
- oxygen is released which is used for cellular respiration by all living organisms✓
 - Carbon dioxide is absorbed thus maintaining its concentration✓
 - Carbohydrates (glucose and starch) are produced, from which fats and proteins are synthesised. Serves as food for the heterotrophic organisms✓
 - the food manufactured during photosynthesis leads to the formation of fossil fuels ✓

(Mark first TWO only)

(2)

(9)

TOTAL QUESTION 3: 25

QUESTION 4

4.1.1 The carbon dioxide from the incoming air✓ had been absorbed by the soda lime✓ (2)

4.1.2 The lime water in B✓ will turn milky✓ (2)

- 4.1.3 - The apparatus was placed in the sun✓
- the plant must have absorbed all carbon dioxide✓
- for photosynthesis✓

Any 2 X 1 (2)

4.1.4 (i) Mitochondrion✓ (1)

- (ii) A - Outer membrane✓
B - Matrix✓
C - Cristae✓ (3)

(iii) It increases the surface area✓ for attachment of enzymes✓/respiration (2)
(12)

4.2.1 A Trachea ✓
B Ribs✓
C Diaphragm✓ (3)

4.2.2 Protection✓/ventilation (1)

4.2.3 Diaphragm✓ internal intercostal muscles✓ external intercostal muscles✓
(Mark first TWO only) (2)

4.2.4 Diagram I✓ (1)

4.2.5 - The ribs are lifted up / the chest cavity expands / moves outwards ✓✓
 - the diaphragm contracts / flattens / move downwards ✓✓ (4)

4.2.6 The decreased volume ✓ of the chest cavity results in increased pressure ✓

OR

Pressure is indirectly proportional to volume ✓✓ (2)
(13)

TOTAL QUESTION 4: 25

QUESTION 5

5.1

5.1.1 (i) A ✓ (1)

(ii) B ✓ (1)

(iii) A ✓ (1)

(iv) D ✓ (1)

5.1.2 8 ✓ (1)

5.1.3 For reliability ✓ / get a more accurate reading (1)
(6)

5.2 1 400 kJ ✓ = P + 452 kJ ✓ + 864 kJ ✓

P = 84 ✓ kJ (4)

5.3

5.3.1 Predator – prey ✓ / predation (1)

5.3.2 density-dependent ✓ (1)

the size of the one ✓ population influences the size of the other population ✓ (2)

5.3.3 (i) 50 ✓ (1)

(ii) 200 ✓ (1)

5.3.4 (approximately) 500 ✓ (1)

5.3.5 Increase ✓ in the rabbit population (1)

because there is a smaller number of dogs feeding ✓ on the rabbits (1)

5.3.6 Mark and recapture / simple sampling

Mark first ONE only (1)

(10)

5.4

Logistic (S) growth form	Geometric (J) growth form
1. Has an equilibrium phase✓	1. Does not have an equilibrium phase✓
2. Approaches the maximum population level smoothly✓	2. Approach the maximum population level suddenly✓

Any 2 x 2 (4)

+ 1 for table (1)

(5)**TOTAL QUESTION 5: 25****TOTAL SECTION B: 100****GRAND TOTAL: 150**