

SECTION A**QUESTION 1**

1.1

1.1.1 C

1.1.2 B

1.1.3 B

1.1.4 D

1.1.5 B

1.1.6 D

1.1.7 C

1.1.8 D

8 x 2 (16)

1.2

1.2.1 lag phase

1.2.2 carrying capacity

1.2.3 mastication

1.2.4 glottis

1.2.5 goblet cells

1.2.6 trachea

1.2.7 photolysis

1.2.8 emigration

(8)

1.3

1.3.1 A only

1.3.2 Both A and B

1.3.3 Both A and B

1.3.4 B only

1.3.5 A only

1.3.6 None

6 x 2 (12)

1.4

1.4.1 (i) vitamin C (ascorbic acid) (1) – oranges/carrots (1)

(2)

(ii) vitamin B₁ (thiamine) (1) – meat (1)

(2)

(iii) iodine (1) – fish (1)

(2)

(iv) iron (1) – liver (1) / spinach (1)

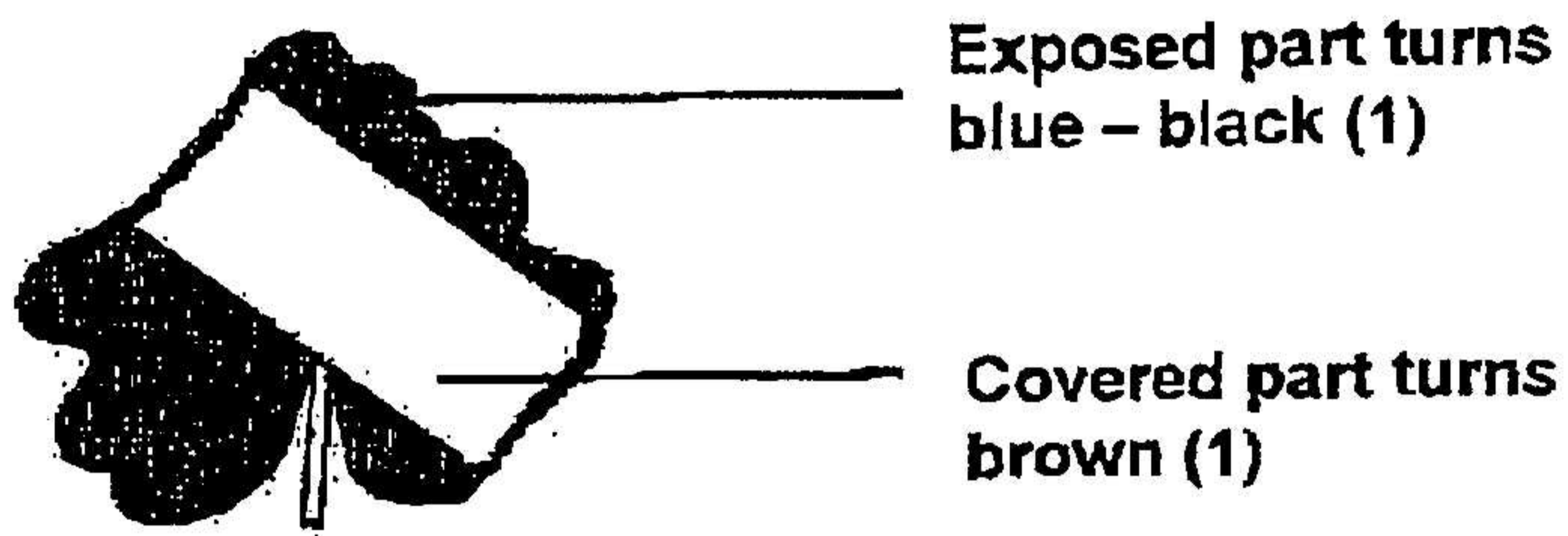
(2)

1.4.2 vitamin D (1) and calcium (1)

(2)

(10)

- 1.5 (3)
- 1.5.1 c, g, h (1)
- 1.5.2 d (3)
- 1.5.3 a, b, f (7)
- 1.6 (2)
- 1.6.1 To destarch it / no starch present at the start of the experiment (2)
- 1.6.2 To prevent light from falling on covered part /shade the part from light/to serve as a control (2)
- 1.6.3



Result of light test for photosynthesis (1) (3)

(7)

Total Section A: 60

SECTION B**QUESTION 2**

2.1

2.1.1 A – larynx (1)
 B – bronchus (1)
 D – diaphragm (1)
 F – intercostal muscles (1) (4)

2.1.2 (i) reduces friction (1) during breathing
 (ii) keeps the bronchus open (1) at all times
 (iii) moistens / cleans / removes debris (1) (3)

2.1.3 D contracts (1) and move downwards (1) resulting in a decrease (1)
 in pressure on C thus allowing air to rush
 into C (1) from the atmosphere and size of C increases (1)
 Any 4 (4)

(11)

2.2

2.2.1 To determine the effect of different concentrations of carbon dioxide (1)
 on the rate and depth of breathing (1) on volume of air breathed in (2)

2.2.2 (i) With a low CO₂ concentration there is a very gradual increase,
 in the rate (1) then it becomes constant (1)
 With a further increase in the CO₂ concentration it
 increases sharply (1) Any 2 (2)

(ii) With a low CO₂ concentration there is a very gradual increase (1)
 in volume, then it increases sharply (1)
 Any 2 (2)

2.2.3 - In order to get rid of excess CO₂ (1)
 - impulses sent to the breathing muscles (1)
 - especially the abdominal muscles (1)
 - to increase the depth (1) of breathing
 - to get rid of excess CO₂ (1)
 - Since there was no exercise (1)
 - therefore no increased need for O₂ (1)
 - the rate of breathing (number of breaths per min.) did not increase (1)
 Any 3 (3)

- 2.2.4 – When (during strenuous exercise) the CO₂ level in the blood increases (1)
- sensory cells in the carotid arteries and aortic arches(1)
 - in the medulla oblongata (1) are stimulated (1)
 - causing it to stimulate the heart to beat faster (1)
 - Thus CO₂ is transported faster (1) to the lungs from the tissues
 - The medulla also sends impulses to the intercostal muscles, diaphragm and abdominal muscles (1)
 - Contraction of the abdominal muscles pushes the diaphragm up more forcibly (1)
 - causing the breathing movements to be speeded up (1)
 - CO₂ is thus removed quickly and O₂ taken up rapidly (1)
- any 7 (7)
- (16)**
- 2.3
- 2.3.1 cellular (1) respiration (1) (2)
- 2.3.2 (i) absorbs CO₂ (1)
- (ii) indicates the presence/absence of CO₂ (1) (2)
- 2.3.3 - the atmospheric air which enters the apparatus contains CO₂ (1)
- this needs to be eliminated (1) by filtering it through a filter which contains a substance like potassium hydroxide (1)
- Potassium hydroxide and the organisms are in the same container (1)
 - Therefore potassium hydroxide should be removed (1) from this container
 - Add outlet to the second tube (1) to let air flow out through apparatus (1) (4)
- (Mark first TWO only)**
- (8)**

Total Question 2: 35

QUESTION 3

3.1

AEROBIC RESPIRATION	ANAEROBIC RESPIRATION
Requires oxygen (1)	Independent of oxygen (1)
Takes place in the cytosol and mitochondria (1)	Takes place in cytosol only (1)
Glucose completely broken down (1)	Incomplete break down of glucose (1)
By-products are carbon dioxide and water (1)	By products – carbon dioxide and ethanol in plants (1)/ and lactic acid in animals
Releases large amounts of energy (1)	Little energy released (1)

Any 4 matching differences: (8)
Table: (1) (9)

3.2

- 3.2.1 - ensures that the external temperature (1)
- does not affect the investigative conditions (1)
or
- keeps temperature inside (1) constant (1) (2)

- 3.2.2 - geometric / J – curve (1) (1)

- 3.2.3 - must belong to the same species (1)/ must be able to interbreed
- occupy the same habitat (1)
- at the same time (1)
- must have the ability to interbreed (1)

(mark first two only) (2)

- 3.2.4 - Growth is very rapid because of lots of food (1)
- therefore lots of respiration (1)
- resulting in growth (1) and increase in numbers (1)
- Growth decreases after 80 minutes because of increased alcohol (1)
- as a result of increased respiration (1)
- up until all the yeast is killed (1)
- food supply is starting to get exhausted (1) / environmental resistance sets in

Any 4 x 1 (4)

- 3.2.5 - With an increase in the yeast population (1)
- there is an increase in the concentration of alcohol (1)
- as a result of anaerobic respiration (1) (3)

- 3.2.6 - competition (1) will result in a decrease in the growth of yeast population (1)
 - which in turn will result in a decreased alcohol concentration (1)
 - If new organism is aerobic then it will die (1)
 - since there is no oxygen (1)
 - therefore no competition with the yeast (1)
 - Hence no change in the alcohol production (1) Any 2 x 1 (2)
- 3.2.7 - temperature (1)
 - flask size / space (1)
 - food / glucose(1)
 - gases (1)
- (Mark first three only)*
- (3)
(17)
- 3.3
- 3.3.1 $1000 = P + 360 \text{ kJ} + 620 \text{ kJ}$
 $P = 1000 - 980 (1)$
 $= 20 (1) \text{ kJ} (1)$ (3)
- 3.3.2 - the rate at which primary consumers (1)
 - accumulate dry mass/biomass/ energy in building (1)
 - new cells and tissues (1)/ available to next level of food chain (1) Any 2 x 1 (2)
- 3.3.3 B (1) (1)
 - a higher percentage (20 %) of food eaten becomes part of its body (1)
 - and is available to the next trophic level (1)
 - compared with A where only a small percentage (2 %) is available (1)
 - population A excretes 62 % (more) of the food eaten (1)
 - while population B excretes 50 % (less) of the food eaten (1) Any 3 x 1 (3)
- (9)

Total Question 3: 35

QUESTION 4

4.1

- 4.1.1 (i) **Protein**
- important component of cell membranes (1)
 - enzymes are special proteins (1)
 - important component of chromosomes (1)
 - important component of protoplasm (1)
 - serves as a reserve energy source (1)
 - component of hormones (1)

Any 2 (2)

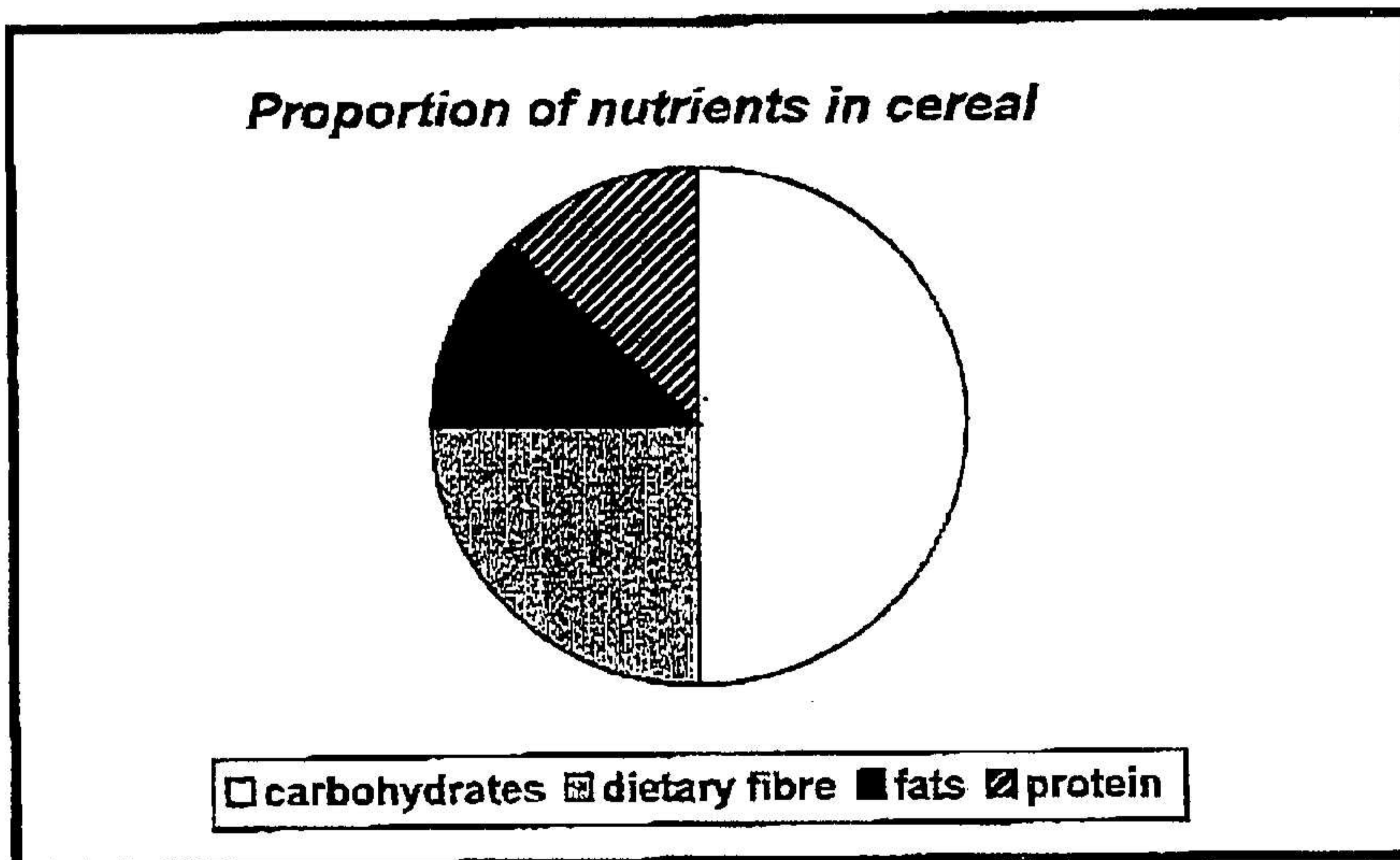
- (ii) **Fibre**
- Reduces transit time of food in alimentary canal (1)
 - it adds bulk to the undigested material in the colon (1)
 - it absorbs and retains water (1)
 - it reacts with various poisonous substances and prevent it from being absorbed into the blood (1)
 - encourage peristalsis (1)
 - reduces risks of heart diseases (1)
 - reduces forming of haemorrhoids (1)

Any 2 (2)

4.1.2 $\frac{100 \times 5\,500}{2\,000}$ (1)
 = 275 (1) g (1) / 0,275 (1) kg (1)

(3)

4.1.3



Correct type of graph	1
Correct proportions/%	4 x 1 = 4
Label / key for each slice	4 x 1 = 4
Title	1

(10)

- 4.1.4 - cholesterol accumulates in blood vessels (1)
 - thus clogging them (1)
 - causing heart defects (1) (3)
(20)
- 4.2
- 4.2.1 Between 0 to 2 (1) arbitrary units (1) (2)
- 4.2.2 photosynthesis (1) (1)
- 4.2.3 - No photosynthesis (1) is taking place
 - only respiration is taking place (1) (2)
- 4.2.4 6,2 – 6,4 (1) mg / 50 cm³ (1) (2)
- 4.2.5 - the rate of photosynthesis equals (1)
 - the rate of respiration (1)/compensation point (2) (2)
- 4.2.6 - The rate of photosynthesis becomes constant (1)
 - because the optimum (1) concentration of CO₂ (1) for photosynthesis
 has been taken up/
 - because chlorophyll molecules were saturated (1)
 - enzymes limiting (1) (4)
- 4.2.7 - temperature (1)
 - water (1) (2)
(15)

Total Question 4: 35

SECTION C

QUESTION 5

- 5.1
- 5.1.1 To create a similar condition to that of the body / It is the optimum
 body temperature (2) (2)
- 5.1.2 (i) mass/amount of sample (1)
- (ii) amount of gastric juice (1) released in the stomach (2)
- 5.1.3 (i) fried eggs (2)
- (ii) scrambled eggs (2) (4)

- 5.1.4 (i) - The sample was already partially mechanically broken down (1) by scrambling/mixing process
 - Thus creating a greater surface area for the gastric juice to act on (1) (2)
- (ii) - The samples underwent mechanical digestion by chewing and mastication in the mouth (1)
 - before undergoing chemical digestion (1)
 - and mechanical digestion by peristalsis in the stomach (1)
 - correct pH in the stomach (1) Any 2 x 1 (2)
- 5.1.5 - the eggs could be chopped-up (1) to increase the surface area (1) (2)
- 5.1.6 - contains enzymes / proteases (1)
 - contains water which provides the medium for chemical reaction (1)
 - contains HCl which provides an acid medium for enzyme action (1) (3)
 (17)

5.2

Chemical Digestion of Fats

- Digestion of fats occur by the process of hydrolysis (1)
- Fats are hydrolysed to fatty acids (1) and glycerol (1) in the small intestine
- Enzymes speed up this process.
- The following digestive juices play a role in the digestion of fats:
 - pancreatic juice (1)
 - succus entericus (1)
 - bile (1)
- Bile has no enzymes (1)
- It is released from the gall bladder into the duodenum
- where the bile salts emulsifies fats (1)
- into small droplets (1)
- thereby increasing the surface area (1) for enzyme action.
- Pancreatic juice contains the enzyme pancreatic lipase (1)
- which converts fats to fatty acids and glycerol
- Succus entericus contains intestinal lipase (1)
- which converts fats to fatty acids and glycerol

Max. (9)

Absorption of fats

- Fat absorption takes place through the villi (1) in the small intestine
- The absorption of fats is a complex process involving bile salts (1)
- Glycerol is soluble and is therefore absorbed actively (1)
- Fatty acids combine with the bile salts to form a fatty acid-bile salt complex (1)
- This complex diffuses (1) through the columnar epithelium of the villi
- The fatty acids separate from the bile salts (1)
- and recombine (1) with the glycerol to form small fat droplets / (triglycerides) (1)
- which are absorbed into vessels called lacteals (1)

Max. (6)**Synthesis**

MARKS	DESCRIPTION
0	Not attempted
1	Significant gaps in the logic and flow of the answer
2	Minor gaps in the logic and flow of the answer
3	Well structured – demonstrates insight and understanding of the question

(3)

Total Question 5: 35
TOTAL SECTION C: 35
GRAND TOTAL: 200

BIOLOGIE/HGV1

2
SENIORSERTIIKAAT-EKSAMEN

VRAAG 1

- 1.1
 1.1.1 C
 1.1.2 B
 1.1.3 B
 1.1.4 D
 1.1.5 B
 1.1.6 D
 1.1.7 C
 1.1.8 D
- 8 x 2 = (16)**

- 1.2
 1.2.1 sloerfase
 1.2.2 drakapasiteit / dravermoë
 1.2.3 mastikasie
 1.2.4 glottis / stemspleet
 1.2.5 bekerselle
 1.2.6 tragea
 1.2.7 fotolise
 1.2.8 emigrasie
- (8)**

- 1.3
 1.3.1 A alleen
 1.3.2 Beide A en B
 1.3.3 Beide A en B
 1.3.4 B alleen
 1.3.5 A alleen
 1.3.6 geen
- 6 x 2 = (12)**

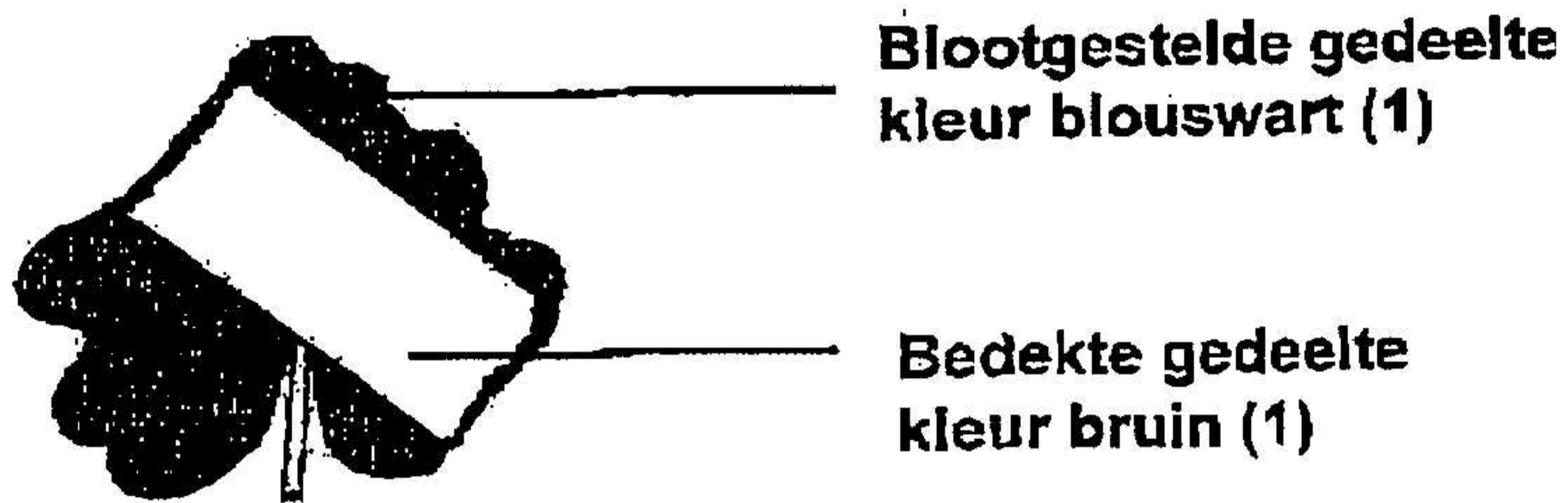
- 1.4
 1.4.1 (i) vitamien C (askorbiensuur) (1) – lemoene/ wortels (1) (2)
 (ii) vitamien B₁ (tiamien) (1) - vleis (1) (2)
 (iii) iodium (1) - vis (1) (2)
 (iv) yster (1) - Lewer (1) / spinasie (1) (2)
 1.4.2 vitamien D (1) en kalsium (1) (2)
(10)

1.5

Kopiereg voorbehou

Blaai asseblief om

- 1.5.1 c, g, h (3)
- 1.5.2 d (1)
- 1.5.3 a, b, f (3)
(7)
- 1.6
- 1.6.1 Om dit te onstysel / sodat geen stysel teenwoordig is met die aanvang van die eksperiment nie (2)
- 1.6.2 Om te voorkom dat lig op die bedekte deel val /skerm teen lig te vorm / om as 'n kontrole te dien (2)
- 1.6.3



**Resultaat van die toets om te toon of lig noodsaaklik is vir fotosintese (1) (3)
(7)**

TOTAAL AFDELING A: 60

AFDELING B

Kopiereg voorbehou

Blaai asseblief om

VRAAG 2

2.1

2.1.1 A – larinks (1)
 B – brongus (1)
 D – diafragma (1)
 F – interkostale spiere / tussenribspiere (1) (4)

2.1.2 (i) verminder wrywing (1) tydens asemhaling
 (ii) Hou die brongus te alle tye oop (1)
 (iii) bevogtig / maak skoon / verwyder afval (1) (3)

2.1.2 D trek saam (1) en beweeg afwaarts (1) dit het 'n afname (1) in die druk op C tot gevolg wat die snelle beweging van lug na C (1) vanaf die atmosfeer toelaat - die grootte van C neem toe (1) Enige 4 (4)
 (11)

2.2

2.2.1 Om die invloed van verskillende koolstofdiksiedkonsentrasies (1) op die tempo en diepte van asemhaling te bepaal (1) / op die volume van lug wat ingeasem word (2)

2.2.2 (i) By 'n lae CO₂ - konsentrasie is daar 'n geleidelike toename in die tempo (1) totdat dit konstant raak (1)
 By 'n verdere styging in die CO₂ -konsentrasie is daar 'n skerp toename (1)
 Enige 2 (2)

(ii) By 'n lae CO₂ -konsentrasie is daar 'n geleidelike toename (1) in volume wat dan skerp toeneem (1)
 Enige 2 (2)

2.2.3 - Om van oortollige CO₂ (1) ontslae te raak
 - is impulse na die asemhalingspiere (1) gestuur
 - veral die abdominale spiere (1)
 - om die diepte (1) van asemhaling te laat toeneem
 - om ontslae te raak van oortollige CO₂ (1)
 - Omdat geen oefening plaasgevind het nie (1)
 - is daar gevolglik nie 'n groter nood vir meer O₂ (1) nie
 - Gevolglik het die tempo van asemhaling (getal asemhalings per min.) nie toegeneem nie (1)
 Enige 3 (3)

2.2.4 - Wanneer (tydens strawwe oefening)) die CO₂ vlak in die bloed styg (1)

- word sensoriese selle in die karotis en aortaboë (1) en medulla oblongata (1) gestimuleer (1)
 - en veroorsaak dat die hart vinniger klop (1)
 - Dus word CO₂ vinniger vervoer (1) vanaf die weefsels na die longe
 - Die medulla stuur ook impulse na die tussenribspiere, diafragma en abdominale spiere (1)
 - Sametrekking van die abdominale spiere druk die diafragma met met groter krag op (1)
 - wat asemhalingbewegings versnel (1)
 - CO₂ word dus vinnig verwyder en O₂ word vinnig opgeneem (1)
- enige 7 (7)
(16)
- 2.3
- 2.3.1 sellulêre (1) respirasie (1) (2)
- 2.3.2 (i) absorbeer CO₂ (1)
- (ii) dui die teenwoordigheid/ afwesigheid van CO₂ aan (1) (2)
- 2.3.3 - die atmosferiese lug wat die apparaat binnedring bevat CO₂ (1)
dit moet verwyder word deur dit te filtreer met 'n filtreerder wat 'n stof soos kaliumhidroksied bevat (1)
- Kaliumhidroksied en die organismes kom in dieselfde houer voor (1) daarom behoort die kaliumhidroksied uit die houer verwyder te word.
 - Voeg 'n uitlaatpypie by die tweede buis (1) om lug uit die apparaat uit te laat vloei (1)
- (Merk slegs eerste TWEE)** (4)
(8)

Totaal Vraag 2: 35

VRAAG 3

3.1

AËROBIESE RESPIRASIE	ANAËROBIESE RESPIRASIE
Benodig suurstof (1)	Onafhanklik van suurstof (1)
Vind plaas in die sitosol mitochondrioms (1)	Vind slegs in die sitosol plaas (1)
Glukose word volledig afgebreek (1)	Glukose word slegs gedeeltelik afgebreek(1)
Nuwe-produkte is koolstofdiksied en water (1)	Nuwe-produkte – koolstofdiksied en etanol in plante (1)/ en melksuur in diere
Groot hoeveelhede energie word vrygestel(1)	Min energie word vrygestel (1)

Enige 4 bypassende verskille : (8)
Tabel : (1) (9)

3.2

- 3.2.1 - om te verseker dat die eksterne temperatuur (1)
 - nie die toestande tydens die ondersoek beïnvloed nie (1)
 of
 - hou die temperatuur binne (1) konstant (1) (2)

- 3.2.2 - geometriese / J – kromme (1)

- 3.2.3 - moet aan dieselfde spesie behoort / moet die vermoë hê om te kan kruisteel (1)
 - moet dieselfde habitat bewoon (1)
 - op dieselfde tyd (1)
 (Merk slegs eerste TWEE) (2)

- 3.2.4 - Omdat voedsel volop is, vind groei vinnig plaas (1)
 - daarom vind respirasie vinnig plaas (1)
 - wat groei (1) en 'n toename in getalle tot gevolg het (1)
 - Groei neem na 80 minute af omdat daar 'n toename in alkohol (1) is
 - as gevolg van 'n toename in respirasie (1)
 - totdat die gis gedood word (1)
 - voedselvoorsiening begin uitgeput raak (1) / omgewingsweerstand begin (1)
 Enige 4 x 1 (4)

- 3.2.5 - Met 'n toename in die gisbevolking (1)
 - is daar 'n toename in die konsentrasie van die alkohol (1)
 - as gevolg van anaërobiese respirasie (1)
 Enige 3 x 1 (3)

- 3.2.6 - kompetisie (1) sal veroorsaak dat daar 'n afname in die groei van die gisbevolking sal wees (1)
 - wat weer 'n afname in die alkoholkonsentrasie sal veroorsaak (1)
 - as die nuwe organisme aërobies is sal dit sterf (1)
 - omdat daar geen suurstof (1) is nie
 - daarom geen kompetisie met die gisselle (1)
 - dus geen verandering in die alkoholproduksie nie (1)
 Enige 2 x 1 (2)
- 3.2.7 - temperatuur (1)
 - grootte van die fles / ruimte (1)
 - voedsel / glukose(1)
 - gasse (1)
 (Merk slegs eerste DRIE) (3)
 (17)
- 3.3
 3.3.1 $1000 = P + 360 \text{ kJ} + 620 \text{ kJ}$
 $P = 1000 - 980 (1)$
 $= 20 (1) \text{ kJ} (1)$ (3)
- 3.3.2 - die tempo waarteen primêre verbruikers (1)
 - droë massa / biomassa / energie (1) akkumuleer
 - nuwe selle en weefsels (1)/ beskikbaar op volgende vlak van voedselketting (1)
 Enige 2 x 1 (2)
- 3.3.3 B (1) (1)
 - 'n hoër persentasie (20 %) van die voedsel wat geëet word, word deel van die liggaam (1)
 - en is beskikbaar vir die volgende trofiese vlak (1)
 - in vergelyking met A waar slegs 'n klein persentasie (2 %) beskikbaar is (1)
 - bevolking A skei 62 % (meer) uit van die voedsel wat ingeëem is (1)
 - terwyl bevolking 50 % (minder) van die voedsel wat ingeëem is, uitskei (1)
 Enige 3 x 1 (3)
 (9)

Totaal Vraag 3: 35

VRAAG 4

4.1

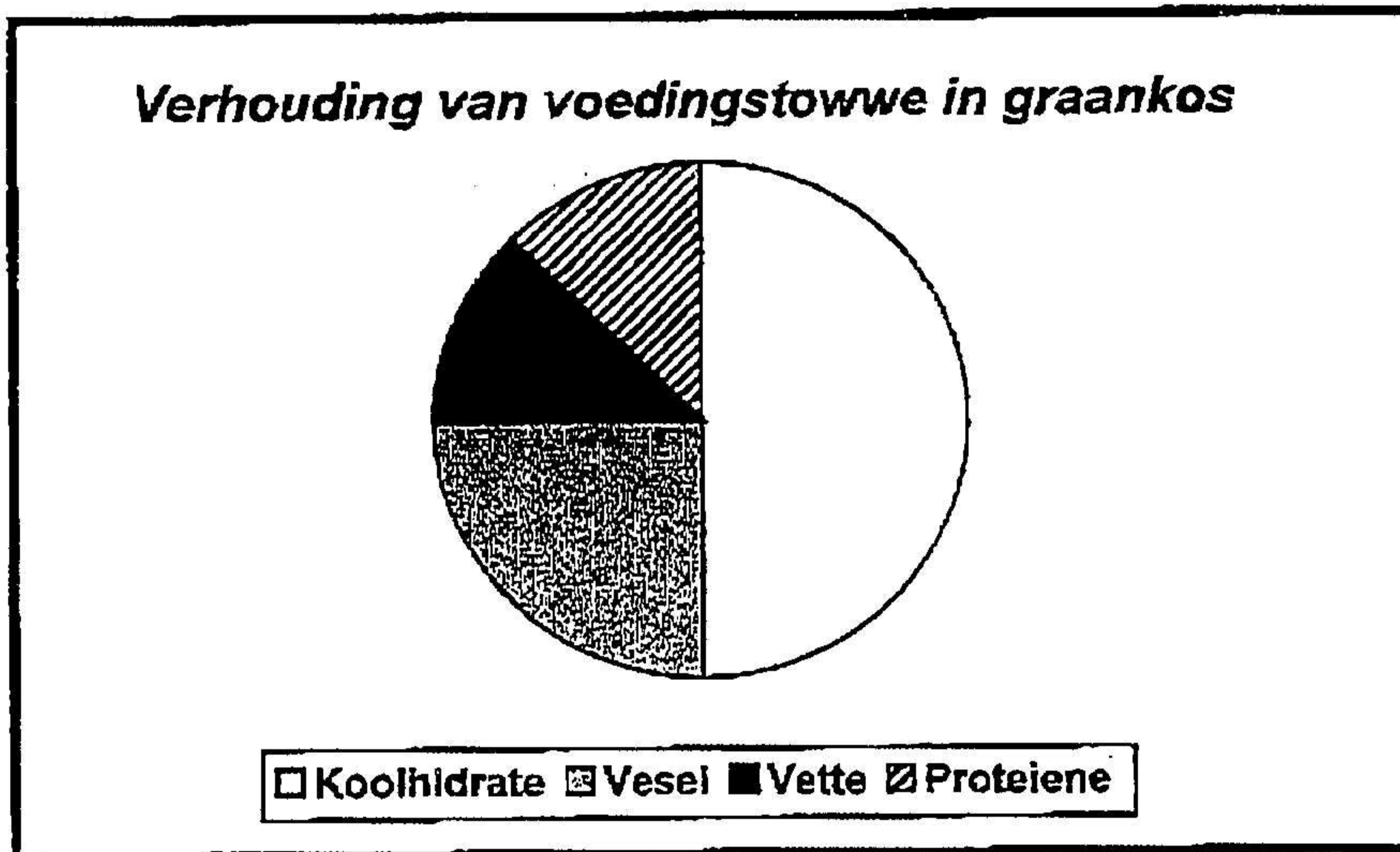
- 4.1.1 (i) **Proteïene**
- belangrike komponent van selmembrane (1)
 - ensieme is spesiale proteïene (1)
 - belangrike komponent van chromosome (1)
 - belangrike komponent van die protoplasma (1)
 - dien as 'n resêrwe energiebron (1)
 - komponent van hormone (1)
- Enige 2 x 1 (2)

- (ii) **Vesel**
- verminder die deurgangtyd van voedsel in die spysverteringskanaal (1)
 - maak die onverteerde reste in die kolon lywig (1)
 - absorbeer en behou water (1)
 - dit reageer met verskillende giftige stowwe en verhoed dat dit deur die bloed geabsorbeer word (1)
 - bevorder peristalse (1)
 - verlaag die risiko van hartsiektes (1)
 - verhinder die vorming van aambeie (1)
- Enige 2 x 1 (2)

4.1.2
$$\frac{100}{2000} \times 5\,500 (1)$$

$$= 275 (1) \text{ g } (1) / 0,275 (1) \text{ kg } (1)$$
 (3)

4.1.3



Korrekte tipe grafiek	1
Korrekte verhoudings/%	4 x 1 = 4
Byskif / sleutel vir elke deel	4 x 1 = 4
Opskrif / Titel	1

	(10)
4.1.4 - cholesterol versamel in die bloedvate (1)	
- en verstop hulle dus (1)	(3)
- wat hartsiektes veroorsaak (1)	(20)
4.2	
4.2.1 0 en 2 (1) arbitrêre eenhede (1)	(2)
4.2.2 Fotosintese (1)	(1)
4.2.3 - Fotosintese vind nie plaas nie (1)	
- slegs respirasie vind plaas (1)	(2)
4.2.4 6,2 – 6,4 (1) mg / 50 cm ³ (1)	(2)
4.2.5 - die tempo van fotosintese is gelyk (1)	
- aan die tempo van respirasie (1)/ kompensasiëpunt (2)	(2)
4.2.6 - Die tempo van fotosintese raak konstant (1)	
- omdat die optimum (1) konsentrasie van CO ₂ (1) vir fotosintese bereik is/	
- omdat die chlorofil molekule versadig was (1)	
- ensieme beperk is (1)	(4)
4.2.7 - temperatuur (1)	
- water (1)	(2)
	(15)

Totaal Vraag 4: 35

AFDELING C

VRAAG 5

- 5.1
- 5.1.1 Om dieselfde toestand as die van die liggaam te skep / Dit is die optimum liggaamstemperatuur (2) (2)
- 5.1.2 (i) massa / hoeveelheid van die monster (1)
- (ii) hoeveelheid maagsap (1) wat in die maag vrygestel word (2)
- 5.1.3 (i) gebakte eiers (2)
- (ii) roereiars (2) (4)
- 5.1.4 (i) - Die monster was alreeds gedeeltelik meganies afgebreek (1) deur die roer/mengproses
- Dus 'n groter oppervlakarea waarop die maagsap kan inwerk (1) (2)
- (ii) - Die monsters het meganiese vertering in die mond ondergaan deur die kouproses en mastikasie (1)
- voordat dit chemiese vertering (1) ondergaan
- en meganiese vertering deur peristalse in die maag (1)
- geskikte pH in die maag (1)
- Enige 2 (2)
- 5.1.5 - die eiers kan fyngeskap (1) word om die oppervlakarea te vergroot(1) (2)
- 5.1.6 - besit ensieme / proteases (1)
- bevat water wat die medium vir chemiese vertering verskaf (1)
- bevat HCl wat die suurmedium vir die werking van ensieme verskaf (1) (3)
- (17)

5.2

Chemiese vertering van vette

- Vertering van vette begin deur die proses van hidrolise (1)
- Vette word gehidroliseer tot vetsure (1) en gliserol (1) in die dunderm
- Ensieme versnel die proses
- Die volgende verteringssappe speel 'n rol in die vertering van vette:
 - pankreassap (1)
 - dermsap / succus entericus (1)
 - gal (1)
- Gal bevat geen ensieme (1)
- Dit word in die duodenum vanuit die galblaas vrygestel
- waar die galsoute die vette emulsifiseer (1)
- om klein vetdruppeltjies te vorm (1)
- wat die oppervlakarea vergroot (1) vir ensiemwerking
- Pankreassap bevat die ensiem pankreaslipase (1)
- wat die vette omskakel na vetsure en gliserol
- Succus entericus / dermsap bevat dermlipase (1)
- wat vette omskakel na vetsure en gliserol

Maks. (9)**Absorpsie van vette**

- Vetabsorpsie vind plaas in die villi (1) in die dunderm
- Die absorpsie van vette is 'n komplekse proses waarby galsoute betrokke is (1)
- Gliserol is oplosbaar en word daarom aktief geabsorbeer (1)
- Vetsure verbind met die galsoute om 'n vetsuurgalsoutverbinding te vorm (1)
- Die binding diffundeer (1) deur die kolomepiteelselle van die villi
- Die vetsure skei van die galsoute (1)
- en verbind (1) weer met die gliserol om klein vetdruppeltjies te vorm / (trigliseries) (1)
- wat deur vate wat bekend staan as lakteaalvate geabsorbeer word (1)

Maks. (6)**Sintese**

PUNTE	BESKRYWING
0	Geen poging
1	Groot leemtes in die logiese en vloei van die antwoord
2	Klein leemtes in die logiese en vloei van die antwoord
3	Goed gestruktureerd – toon insig en begrip van die vraag

(3)
(35)

Totaal Vraag 5: 35
TOTAAL AFDELING C: 35
GROOTTOTAAL: 200