QUESTION 1

1.1
1.1.1 B
1.1.2 C
1.1.3 D
1.1.4 B
1.1.5 C
1.1.6 B
1.1.7 C

7 x 2 **(14)**

1.2
1.2.1 Pleura
1.2.2 Iron
1.2.3 Ciliated epithelium
1.2.4 Emulsification
1.2.5 Assimilation
1.2.6 Photosynthesis
1.2.7 Chlorophyll

(7)

1.3
1.3.1 F
1.3.2 D
1.3.3 A
1.3.4 C
1.3.5 G
1.3.6 H
1.3.7 E

7 x 2 **(14)**

1.4
1.4.1 (i) 2 (2)
((ii) 6 (2)

1.4.2 Stomach (2) (2)

1.4.3 - Temperature (1)
- Enzyme concentration / substrate concentration (1) (2)
(Mark first two only) **(8)**

1.5

1.5.1 Mark-recapture / Peterson method (1) (1)

1.5.2 with paint / koki pen / nail polish(1) (1)

1.5.3 6 (six) (1) snails (1)

1.5.4 A (2) and D (2) (4)

(7)

Total Question 1: 50
TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1

2.1.1 A - Oesophagus
E - Rectum
F - Appendix
H - Gall bladder (4)

2.1.2 - Production and secretion of bile (1)
- Production and storage of glycogen (1)
- Production and storage of fat (1)
- Deamination of excess amino acids (1)
- Synthesis of viutamins A, D, E, K & B_{12} (1)

(Mark first three only) (3)

2.1.3 (i) C

(ii) B

(iii) G

(iv) H (4)

2.1.4 - The folds of mucosa/millions of villi with microvilli present (1) increase surface area for absorption is (1)

- movement of intestine wall / finger-like structure of villi (1) ensures close contact of digested food with absorption area (1)
- absorption surface is thin-walled/consists of a single layer of columnar epithelial cells (1) for easy diffusion of digested nutrients (1)
- absorption surface is moist/as a result of digestive juices (1) and mucin substances are absorbed in solution (1)
- blood capillaries and lacteals in the villi (1) increase absorption and a quick transport of nutrients(1)
- slow movement of food through the small intestines (1) allows time for maximum absorption (1)
- very long (1) / allows time for maximum absorption (1)
- ileo-caecal valve stays closed for a longer time up to 8hrs (1) / allowing enough time for absorption (1)

(Mark first three only) 3 X 2 (6)

(17)

2.2

2.2.1 (i) digestion / hydrolysis (1)

(ii) absorption (1) (2)

2.2.2 – water acts as a solvent to dissolve the nutrients (1)

- it facilitates easy diffusion between the absorptive surface (1) (2)

2.2.3 - villi (1) (1)

2.2.4 – amino acids (1) (1)

2.2.5 - excess amino acids (molecules C) cannot be stored (1) in the body

- they are broken down in the liver (1)

- by the process of deamination (1)

- into glucose (1) and urea (1)

- The glucose is oxidised to release energy (1)

- while the urea is excreted by the kidneys (1)

Any 2 (2)

(8)

Total Question 2 : 25

QUESTION 3

3.1

3.1.1 (i) Lean beef (1) and chicken (1) (2)
(ii) Milk (1) (1)
(iii) Lean beef (1) and chicken (1) (2)
(iv) Lean beef (1) / chicken (1) / beans (1) Any 2 (2)

3.1.2 - Contain a lot of cellulose (1)
- seed contains a lot of stored food as sugars and starch (1)
(2)
(9)

3.2

3.2.1 - Water (1) → from the soil (1)
- Carbon dioxide (1) → from the air (1)/atmosphere (4)

3.2.2 (i) - **A** (epidermis) is transparent (1) to allow light into (1) the chlorophyll – containing cells
- Stomata (1) on the epidermis allow gaseous exchange (1) to take place

(Mark first one only) Any 1 X 2 (2)

(ii) B (Palisade cells)

- are found just below epidermis of the leaf (1) for capturing sunlight effectively (1)
- are in close contact with xylem and phloem (1) for transporting water and products of photosynthesis (1)
- are in close contact with intercellular air spaces (1) for rapid diffusion of CO_2 , O_2 and water (1)
- are elongated (1) allowing diffusion of gases into and out of the cells (1)
- contain numerous chloroplasts (1)/chlorophyll for maximum absorption of sunlight (1) photosynthesis
- are arranged at right angles to the epidermis (1) to allow greater number of cells to be exposed to sunlight (1)

(Mark first one only) Any 1 X 2 (2)

3.2.3 (i) To breakdown the cell walls and cell membranes (1) for iodine to penetrate (1) / to "kill" cells (1) and therefore stop chemical reactions (1) (2)

(ii) For chlorophyll to be extracted / to remove the green colour (1)/dissolved in order to clearly see the result of the starch test (1) (2)

(iii) To soften the leaf and make it pliable (1) because it was hardened by alcohol (1) (2)

(ii) For safety reasons (1) because alcohol is highly flammable / inflammable (1) (2)
(16)

Total Question 3: 25

QUESTION 4

4.1.1 3 (1) litres (1) (2)

4.1.2 Breaths become deeper (1) because possibly exercising (1) therefore need more oxygen (1) for cellular respiration (3)

4.1.3 6 (1) breaths (1)
(6)

4.2.1 - in solution / carbonic acid in blood plasma (1)
- in blood plasma and red blood cells as bicarbonate ions (1)
- combined with haemoglobin as carbaminohaemoglobin (1)

Any 2 (2)

4.2.2 -squamous epithelium (1) (1)

4.2.3 – shaped as biconcave discs (1) thus increasing the surface area (1) for the absorption and transport of gases
- flexible (1) therefore can move through the narrow capillaries and come into close contact (1) with walls of capillaries

Any 1 x 2 (2)
(5)

4.3.1 Water vapour (1)

4.3.2 79,00 – 78,80 (1) = 0,20% (1) (2)

4.3.3 - Cellular respiration took place in the cells (1)
- carbon dioxide is released as a product (1) hence an increase (2)
(5)

4.4.1 Respiration (1) (1)

4.4.2 Lime water/bromothymol blue (1)

4.4.3 (i) It absorbs carbon dioxide from the incoming air (2)

(ii) To confirm absence of carbon dioxide (2)

4.4.4 - Set up the apparatus as in the experiment (1)
- Leave out (1) the living organism (1)/ rat in flask C /use a dead sterilized (1)
- rat / seeds (1) / any living organism that does not photosynthesise (1)

(3)
(9)

Total Question 4: 25

QUESTION 5

5.1.1 (i) - Glucose (1) (1)

(ii) - energy (1) / ATP
- carbon dioxide (1)
- water (1)

(Mark first two only) (2)

(iii) Lactic acid (1)

5.1.2 - Alcohol is formed in plant cells (1)
Lactic acid is formed in animal cells (1)
- CO_2 formed in plant cells (1)
No CO_2 formed in animal cells (1)

(Mark first difference only) Any 1 x 2 (2)
(6)

5.2.1 A group of organisms of the same species/kind (1) inhabiting more or less the same area (1) at the same time (1)

Any 3 (3)

5.2.2 2007 (1) (1)

5.2.3 2008 (1) (1)

5.2.4 – HIV/Aids education (1) has been intensified (1)
- less (1) promiscuity (1)
- greater precaution (1) during sexual behaviour (1)
- greater care (1) and more strenuous (1) testing of blood for banks

Any 1 x 2 (2)

5.2.5 2001 (1) (1)

5.2.6 Census (1) (1)

5.2.7 It is density-dependent because the more people infected (1) the higher (1) the risk of others contracting the disease (1) (3)

5.2.8 South Africa has a good transport infrastructure and a highly mobile population (2)
(14)

5.3 (i) Competition between individuals of the same species (1) for the same limited resources, (1) is known as intraspecific competition.

Competition between individuals of different species (1) for the same limited resources is interspecific competition

(3)

(ii) A predator is an organism that hunts, captures and kills other animals for food (1)
A prey is an organism upon which predators feed (1) (2)
(5)

Total Question 5: 25
TOTAL SECTION B : 100
GRAND TOTAL : 150

VRAAG 1

1.1
1.1.1 B
1.1.2 C
1.1.3 D
1.1.4 B
1.1.5 C
1.1.6 B
1.1.7 C

7 x 2 **(14)**

1.2
1.2.1 Pleura
1.2.2 Yster
1.2.3 Wimperepiteel / Gesillieerde epiteel
1.2.4 Emulsifisering
1.2.5 Assimilasie
1.2.6 Fotosintese
1.2.7 Chlorofil

(7)

1.3
1.3.1 F
1.3.2 D
1.3.3 A
1.3.4 C
1.3.5 G
1.3.6 H
1.3.7 E

7 x 2 **(14)**

1.4
1.4.1 (i) 2 (2)
(ii) 6 (2)

1.4.2 Maag (1)

1.4.3 Soutsuur (1)

1.4.4 - Temperatuur (1)
- Ensiemkonsentrasie / substraatkonsentrasie (1) (2)
(Merk slegs eerste TWEE) **(8)**

1.5

1.5.1 Merk-en-hervang / Petersen-metode (1) (1)

1.5.2 met verf / koki pen / naellak(1) (1)

1.5.3 6 (ses) (1) slakke (1)

1.5.4 A (2) en D (2) (4)
(7)

Totaal Vraag 1: 50
TOTAAL AFDELING A: 50

AFDELING B

VRAAG 2

2.1

2.1.1 A - Esofagus / slukderm
E - Rektum
F - Appendiks
H - Galblaas (4)

2.1.2 - Produksie en sekresie van gal (1)
- Produksie en berging van glikogeen (1)
- Produksie en berging van vet (1)
- Deaminering van oortollige aminosure (1)
- Sintese van vitamiene A, D, E, K & B_{12} (1)

(Merk slegs eerste DRIE) (3)

2.1.3 (i) C

(ii) B

(iii) G

(iv) H

(4)

2.1.4 - Die voue in die mukosa /miljoene villi met mikrovilli (1) teenwoordig om die oppervlakarea vir absorpsie te verhoog(1)

- bewegings van die dundermwand/ vingeragtige struktuur van die villi (1) verseker noue kontak van verteerde voedsel met absorpsieoppervlak (1)

- absorpsieoppervlak is dunwandig /bestaan uit 'n enkellaag kolomepiteelselle (1) vir maklike diffusie van verteerde voedingstowwe(1)

- absorpsieoppervlak is vogtig / as gevolg van verteringsappe en musienstowwe (1) word in oplossing geabsorbeer(1)

- bloedkapillêres en lakteaalvate in die villi (1) verhoog absorpsie en vinnige vervoer van voedingstowwe (1)

- voedsel beweeg stadig deur die dunderm(1) laat genoeg tyd toe vir maksimale absorpsie (1)

- baie lank (1) laat genoeg tyd toe vir maksimum absorpsie (1)

- ileosekale-klep bly vir tot 8h gesluit (1) laat genoeg tyd toe vir absorpsie (1)

(Merk slegs eerste DRIE) 3 X 2 (6)

(17)

2.2

2.2.1 (i) vertering / hidrolise (1)

(ii) absorpsie (1) (2)

2.2.2 – water tree as 'n oplosmiddel vir voedingstowwe op (1)

- dit bevorder maklike diffusie tussen die absorberende oppervlaktes (1) (2)

2.2.3 - villi (1) (1)

2.2.4 – aminosure (1) (1)

2.2.5 - oortollige aminosure (molekules C) kan nie in die liggaam gestoor (1) word nie

- hulle word in die lewer afgebreek (1)

- deur die proses van deaminasie (1)

- na glukose (1) en ureum (1)

- Die glukose word geoksideer om energie vry te stel (1)

- terwyl die ureum deur die niere uitgeskei word (1)

Enige 2 (2)
(8)

Totaal Vraag 2: 25

VRAAG 3

3.1

3.1.1 (i) Maer beesvleis (1) en hoender (1) (2)
(ii) Melk (1) (1)
(iii) Maer beesvleis (1) en hoender (1) (2)
(iv) Maer beesvleis (1) / hoender (1) / boontjies (1) Enige 2 (2)

3.1.2 - bevat baie sellulose (1)
- sade, kan baie gestoorde voedsel as suikers en stysel bevat (1) (2)
(9)

3.2

3.2.1 - Water (1) → van die grond (1)
- Koolstofdioksied (1) → vanaf die lug (1)/atmosfeer (4)

3.2.2 (i) - A (epidermis) is deurskynend (1) om sonlig deur te laat (1) na die chlorofilbevattende selle
- Stomata / huidmondjies(1) op die epidermis laat gaswisselling (1) toe om plaas te vind

(Merk slegs eerste een) Enige 1 X 2 (2)

(ii) B (Palissade selle)

- word net onder die epidermis van die blaar (1) aangetref om sonlig effektief (1) op te vang

- is in noue kontak met die xileem en die floeëm (1) vir die vervoer van water en produkte van fotosintese (1)

- is in noue kontak met die intersellulêre lugruimtes (1) vir vinnige diffusie van CO_2 , O_2 en water (1)

- is verleng (1) wat die diffusie van gasse in en uit die selle toelaat (1)

- besit baie cloroplaste (1)/chlorofil vir maksimum absorpsie van sonlig (1) vir fotosintese

- selle is regop geranskik ten opsigte van die epidermis (1) om 'n groter getal selle aan die sonlig bloot te stel (1)

(Merk slegs eerste een) Enige 1 X 2 (2)

3.2.3 (i) Om die selwande en selmembrane te breek (1) vir jodiumoplossing om binne te dring (1) / om selle dood te maak (1) en chemiese reaksies te stop (1) (2)

(ii) Om chlorofil te onttrek / om die groen kleur te verwyder (1)/ op te los om die resultaat van die styseltoets duidelik te sien (1) (2)

(iii) Om die blaar sag en hanteerbaar te maak (1) omdat dit as gevolg van die alkohol (1) hard geword het (2)

(ii) Veiligheidsmaatreël (1) omdat alkohol hoogs vlámbaar / ontvlambaar is (1) (2)

(16)

Totaal Vraag 3: 25

VRAAG 4

4.1.1 3 (1) liters (1) (2)

4.1.2 Asemhaling word dieper (1) omdat oefeninge miskien plaasvind (1) en meer suurstof (1) vir selrespirasie benodig word (3)

4.1.3 6 (1) asemteue (1)
(6)

4.2.1 - in oplossing / koolsuur in die bloedplasma (1)
- as bikarbonaatione (1) in die bloedplasma en rooibloedselle
- in verbinding met hemoglobien om karbaminohemoglobien (1) te vorm

Enige 2 (2)

4.2.2 -plaveiselepiteel (1) (1)

4.2.3 – lyk soos bikonkawe skyfies (1) wat dus die oppervlakarea vergroot (1) vir die absorpsie en vervoer van gasse
- buigsaam (1) kan daarom deur klein kapillêres beweeg en in noue kontak (1) mat die wande van die kapillêres kom

Enige 1 x 2 (2)
(5)

4.3.1 Waterdamp (1)

4.3.2 79,00 – 78,80 (1) = 0,20% (1) (2)

4.3.3 - Sellulêre respirasie vind in die selle plaas (1)
- koolstofdioksied word as 'n produk vrygestel (1) daarom die styging (2)
(5)

4.4.1 Respirasie (1) (1)

4.4.2 Kalkwater / broomtimolblou (1)

4.4.3 (i) Dit absorbeer die koolstofdioksied van die inkomende lug (2)

(ii) Om die afwesigheid van koolstofdioksied te bevestig (2)

4.4.4 - Stel die apparaat soos in die eksperiment op (1)
- Sonder (1) die lewendige organisme (1)/ rot in fles C / gebruik 'n dooie gesteriliseerde (1)
- rot / sade (1) / enige lewende organisme wat nie fotosintetiseer nie (1)

Enige 3 x 1 (3)
(9)
Totaal Vraag 4: 25

VRAAG 5

5.1.1 (i) - Glukose (1) (1)

(ii) - energie (1) / ATP
- koolstofdioksied (1)
- water (1)

(Merk slegs eerste twee) (2)

(iii) Melksuur (1)

5.1.2 - Alkohol word in plantselle gevorm (1)
Melksuur word in dierselle gevorm (1)
- CO_2 word in plantselle gevorm (1)
Geen CO_2 word in dierselle gevorm nie (1)

(Merk slegs eerste verskil) Enige 1 x 2 (2)
(6)

5.2.1 'n Groep organismes van dieselfde spesie /soort (1) wat min of meer in dieselfde gebied bly (1) op dieselfde tyd (1)

Enige 3 (3)

5.2.2 2007 (1) (1)

5.2.3 2008 (1) (1)

5.2.4 – MIV/Vigs opvoeding (1) het toegeneem (1)
- afname (1) in promiskuïteit (1)
- groter voorsorg (1) tydens geslagtelike interaksie (1)
- groter sorg (1) en strenger (1) toetsing van bloed by bloedbanke

Enige 1 x 2 (2)

5.2.5 2001 (1) (1)

5.2.6 Sensus (1) (1)

5.2.7 Dit is 'n digtheidsafhanklike faktor omdat hoe meer mense geïnfekteer word (1) hoe hoër (1) is die risiko dat ander die siekte kan opdoen (1) (3)

5.2.8 Suid Afrika het 'n goeie vervoerinfrastruktuur en 'n bevolking wat baie rondbeweeg bv. van streek tot streek (2)
(14)

5.3 (i) Kompetisie tussen individue van dieselfde spesie (1) vir dieselfde beperkte bronne (1), staan bekend as intraspesifieke kompetisie

Kompetisie tussen individue van verskillende spesies (1) vir dieselfde bron ,staan bekend as interspesifieke kompetisie (3)

(ii) 'n Predator is 'n organisme wat ander diere vir voedsel (1) jag, vang en doodmaak

'n Prooi is die organisme waarop die predator voed (1) (2)
(5)

Totaal Vraag 5: 25
TOTAAL AFDELING B: 100
GROOTTOTAAL: 150