

BIOLOGY P1 SG

MARCH 2005

MEMO

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 vitamins A, D, E, K & B₁₂ (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 CO₂, O₂ 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)
- CO₂ formed in plant cells (1)
- No CO₂ 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