Hoërskool Dr. Johan Jurgens
Life Science
Grade 11
November Final Examination
Paper 1
Marking Guideline

Section A
Question 1

1.1.1 A ✓✓
1.1.2 D ✓✓
1.1.3 D ✓✓
1.1.4 B ✓✓
1.1.5 A ✓✓
1.1.6 B ✓✓
1.1.7 C ✓✓
1.1.8 B ✓✓
1.1.9 B ✓✓
1.1.10 A ✓✓

(10 x 2)
(20)

1.2.1 Stomata ✓
1.2.2 Chlorophyll ✓
1.2.3 Malnutrition ✓
1.2.4 Anorexia nervosa ✓
1.2.5 Hay fever ✓
1.2.6 Hemoglobin ✓
1.2.7 Ureter ✓
1.2.8 Urethra ✓

(8 x 1)
(8)

1.3.1 B only ✓✓
1.3.2 B only ✓✓
1.3.3 Both A and B ✓✓

(3 x 2)
(6)

1.4.1 Plants / flowers / trees ✓ (1)

1.4.2 (a) Dark phase ✓ (1)
(b) Stroma ✓ (1)

1.4.3 Oxygen is needed by living organisms for cellular respiration, if there is no photosynthesis there will be limited to no oxygen for living organisms therefore cellular respiration cannot take place. ✓✓
Provides food for heterotrophic organisms; if there is no food for heterotrophic organisms, we will have no food and will die. ✓✓
Keeps the oxygen concentration in the atmosphere and water constant; concentration levels will be too low for survival on earth. ✓✓
Keeps the level of carbon dioxide constant in the atmosphere and water; levels of carbon dioxide will be to high leading to death. ✓✓

(Mark first two responses only of learners) (4)
(Any two for 4 marks)

[7]

1.5.1 (a) D ✓ (1)
(b) E ✓ (1)
(c) A ✓ (1)

1.5.2 Breathing through your nose can help filter out dust and allergens, boost your oxygen uptake and humidify the air you breathe in. ✓ Mouth breathing can dry out your mouth, increase your risk of bad breath and gum inflammation. ✓ (2)

[5]

1.6.1 (a) A ✓ (1)
(b) B ✓ (1)

1.6.2 The incisors are sharp, and the canines are absent ✓
The premolars and molars are large and flat ✓ (2)

[4]

[50]

Section B
Question 2

2.1.1	(a) Gallbladder ✓	(1)
	(b) Stomach ✓	(1)
	(c) Pyloric sphincter / pylorus ✓	(1)
	(d) Pancreas ✓	(1)
	(e) Liver ✓	(1)
2.1.2	Secretes bile ✓ Converts glucose to glycogen ✓ Converts excess glycose to fat ✓ Stores minerals such as iron ✓ Stores vitamin A, D and B12 ✓ De-amination of excess amino acids ✓ Detoxifies certain harmful substances and make them harmless ✓ **(Any six)**	(6)
2.1.3	The mucus glands on the mucosa layer secretes thick mucus ✓ that acts as a barrier between the acid and the wall of the stomach ✓	(2)
2.1.4	Glucose levels in the blood increase above the normal level ✓ The pancreas is stimulated to secrete insulin into the blood ✓ Insulin travels in the blood to the liver ✓ Where it stimulates the conversion of excess glucose to glycogen ✓ Which is then stored ✓ The glucose level in the blood now decreases ✓ And returns to normal ✓	(7)
2.1.5	Absorption: the end products of digestion are absorbed by the villi in the small intestine. ✓ Egestion: all undigested materials are transported through the colon, temporarily stored in the rectum until it is excreted. ✓	(2)
		[22]
2.2.1	(a) Glomerulus ✓	(1)
	(b) Bowman's capsule ✓	(1)
	(c) Proximal convoluted tubule ✓	(1)
2.2.2	Filtration ✓	(1)
2.2.3	(a) proteins ✓	(1)

(b) glucose ✓ (1)
(c) urea ✓ (1)

2.2.4 The tube is convoluted ✓ to allow sufficient time for re-absorption of useful nutrients ✓
The capillary network is in close contact with the tubule ✓ to facilitate faster re-absorption of nutrients ✓
The cells of the inner wall of the tubule are richly supplied with many mitochondria ✓ to generate energy for active absorption of nutrients back to the surrounding capillaries ✓
The cells of the tubule have microvilli ✓ to increase the surface area to maximum absorption ✓

(Mark first two responses only of learners)
(Any 2 x 2) (4)

2.2.5 No cellular respiration takes place in the dead seeds ✓
As a result, no carbon dioxide is released ✓ therefore, clear lime water remains clear ✓ (2)

(Any 2) [13]

2.3.1 Villus ✓ (1)

2.3.2 (a) Lacteal ✓ (1)
(b) Blood capillaries ✓ (1)

2.3.3 A ✓ (1)

2.3.4 Diffusion ✓ and active transport ✓ (2)

2.3.5

Substrate	Produced in	End product
Carbohydrates	Mouth / pancreas / small intestine ✓	Glucose ✓
Proteins	Stomach / pancreas ✓	Amino acids ✓
Lipids	Pancreas / small intestine ✓	Glycerol and fatty acids ✓

(7)

One mark for table

2.3.6 It is the source of energy ✓ and food for all organisms ✓ (2)

[15]

[50]

Question 3

3.1.1 Carbon dioxide / oxygen is released during cellular respiration ✓✓ (2)

3.1.2 Germinating seeds are actively growing plants parts ✓ therefore, the rate of respiration is higher than in any other parts of the plant ✓ since more energy is required for the active growth process ✓ (3)

3.1.3 No cellular respiration takes place in the dead seeds ✓ as a result, no carbon dioxide is released ✓ therefor, clear lime water remains clear ✓ (3)

3.1.4 There are spaces between the fibres of the cotton plug / gases can diffuse through cotton wool ✓ allows the downward movement of carbon dioxide ✓

OR

The rubber block does not allow the downward movement of carbon dioxide ✓ hence no result would be obtained ✓ (2)

3.1.5 Repeat the experiment several times ✓
Use more seeds / increase sample size ✓ (2)

3.1.6 Some of the cells in the seeds may contain chloroplasts and therefore they perform photosynthesis ✓ and disrupt the end result ✓ (2)

3.1.7 Carbon dioxide ✓✓ (2)

3.1.8 The clear lime water turns milky white in the presence of carbon dioxide✓✓ (2)

[18]

3.2.1 Glycolysis ✓ Kreb's cycle ✓ Oxidative phosphorylation ✓ (3)

3.2.2 Pyruvate acid ✓ (1)

3.2.3 Carbon dioxide ✓ and Hydrogen ions ✓ (2)

3.2.4 Water ✓ and ATP ✓ (2)

3.2.5 Glycolysis ✓ (1)

3.2.6 Kreb's cycle ✓ / Oxidative phosphorylation ✓ (1)

3.2.7 Energy is released gradually and not all at once ✓✓ (2)

[12]

3.3.1 (a) Diaphragm ✓
(b) Intercostal muscles / external and internal intercostal muscles ✓ (2)

3.3.2 Diagram 2 ✓ (1)

3.3.3 The diaphragm is relaxed and therefore restores its original dome shape✓
Size of thoracic / chest cavity is substantially reduced ✓
Size of the lungs became smaller ✓

Mark first two responses only of learners)
(Any 2 x 2) (2)

[5]

3.4.1 (a) C-shaped cartilaginous rings ✓
(b) Trachea ✓ (2)

3.4.2 Ciliated epithelial tissue ✓ (1)

3.4.3 The C-shaped cartilage rings keep the trachea open at all times ✓✓ (2)

3.4.4 Diaphragm contracts and becomes flattened ✓
The length of the thoracic cavity is increased ✓
The external intercostal muscles contract and the rib cage is lifted ✓
This causes the thoracic cavity to be enlarged ✓
The total volume of the thoracic cavity increases ✓
The pressure on the lungs decreases ✓
Since the atmospheric pressure is greater than the pressure on the lungs ✓
Air rich in oxygen is drawn in through the air passages into the lungs ✓

(Any 5) (5)

3.4.5 Alveolus ✓ (1)

3.4.6 (a) Deoxygenated blood ✓
(b) Oxygenated blood ✓ (2)

3.4.7 The protein hemoglobin is a molecule which is responsible for carrying almost all of the oxygen in the blood ✓✓ (2)

[15]

[50]