

TEACHERS WITHOUT BORDERS PROGRAMME

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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

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In Bill Gates words, at the Mandela Day 'Living Together' address: "Maintaining the quality of this country's higher education system while expanding access to more students will not be easy. But it's critical to South Africa's future" – working together, we can help achieve this."

Contributing schools to date:

Clifton School	Milnerton High	Rustenburg Girls' High	St Peter's
Durban Girls'	Northwood High	St Anne's DC	St Stithians
Fairmont High	Roedean	St John's DSG	Wynberg Boys' High
Herzlia High	Rondebosch Boys'	St Mary's DSG Kloof	Wynberg Secondary

MEMO
GRADE 11
JUNE 2019

QUESTION 1

1.1

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

[10]

1.2

F	G	K	A	D	B	C	J	E	L
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[10]

1.3

- 1.3.1 - set apparatus up under water to ensure that no air bubbles are in the system
 - cut stem under water
- seal all glass joints with Vaseline.....
- cut stem at an angle to expose as much xylem as possible (Any TWO) (2)
- 1.3.2 The rate of transpiration will increase as the temperature increases. (2)
- 1.3.3 Indep var is temperature (1)[5]

1.4

- 1.4.1 A – RA C – LV Y – AORTA (3)
- 1.4.2 Closed, closed, open (3)[6]

1.5

- 1.5.1 (peritubular) capillary (1)
- 1.5.2 mitochondrion (1)
- 1.5.2 cuboidal epithelial cell with brush border to increase surface area for absorption (3)[5]

1.6

- 1.6.1 Longitudinal cross section of a root hair cell (1)
- 1.6.2 Large vacuole to store/absorb as much water and mineral salts from the soil as possible (2)
- 1.6.3 Vacuolar pathway (1)[4] {40}

QUESTION 2

2.1

- 2.1.1 Time (1)
- 2.1.2 Only one variable can be changed at a time so if the environment is being changed then the other variables must remain the same, therefore the same leafy shoot must be used (2)
- 2.1.3 To prevent water vapour evaporating off the surface of the water so leading to the apparatus losing mass (2)
- 2.1.4 Grow vegetables in a greenhouse to increase the level of humidity around the plants so decreasing loss of water by transpiration (2)[7]

2.2

- 2.2.1 Xylem – mesophyll
Mesophyll – film of water
Film of water – evaporation into air space as vapour
Transpiration out of the guard cells due to potential difference in the atmosphere and the air space (6)
- 2.2.2 1 – lignin rings for strength and preventing xylem from collapsing in from transpirational pull
2 – cuticle to prevent excess water loss from leaf surface (2)
- 2.2.3 wind, humidity, amount of sunlight (3)[11]

2.3

- 2.3.1 hip, knee, elbow (2)
- 2.3.2 X = hyaline cartilage Y = synovial fluid , arthritis = wearing away of hyaline cartilage and inflammation of synovial fluid etc (4)[6]

2.4

- 2.4.1 vertebra, ilium, femur (3)
- 2.4.2 large surface area for attachment of muscles for leg movement (1)
- 2.4.3 a) cancellous/spongy (1)
b) slight flexibility at the joint (1)[6]{30}

QUESTION 3

3.1

- 3.1.1 Urine production rate dec; urine solute conc increases (2)
- 3.1.2 a) 19 mg/ml (1)
- b) 0,1 l/hr (1)
- 3.1.3 0,1litres = 100ml
- 17,5 mg/ml therefore $17,5 \times 100\text{ml} = 1750 \text{ mg}$ (2)[6]

3.2

- 3.2.1 Diagram to show a longitudinal section of a kidney nephron (2)
- 3.2.2 A afferent arteriole
- B Bowman's capsule
- C renal vein
- D distal convoluted tubule (4)
- 3.2.3 X = F (Bowman's capsule cavity)
- Y = A (afferent arteriole)
- Z = D (distal convoluted tubule) (3)
- 3.2.4 A would have more nitrogenous wastes than C/less oxygen etc (2) [11]

3.3

- 3.3.1 Yes/No with two reasons [3]

3.4

- 3.4.1 Hypertension (2)
- 3.4.2 lessen the force with which the heart muscle contracts; reduce blood vessel contraction (4)[6]

3.5

- 3.5.1 Heading (7)

VESSEL	LUMEN	MUSCLE LAYER	VALVES
ARTERY	NARROW	THICK	NONE
CAPILLARY	VERY SMALL	NONE	NONE
VEIN	WIDER	THIN	PRESENT

3.5.2 The diagram illustrates the internal structure of an artery, capillaries and a vein

and indicates the direction of blood flow through all three (2)

- 3.5.3 i) aneurysm is a weak part of an arterial wall which may burst without warning/symptoms. Results in extreme internal bleeding and almost instant death
- ii) stent is a wire "basket" inserted via a large artery e.g. femoral until it reaches the blockage/clot in an artery. Balloon is inflated to open stent and stent remains to ensure artery remains open
- iii) by-pass is required when coronary artery is blocked vein removed from leg attached to aorta and then attached after the blockage blood now flows from aorta to part of the heart originally starved of oxygen

(5)[14]{40}

TOTAL Q2-3 (70)

QUESTION 4 [40]

SOURCE	YES, USE HYDRO	NO, USE SOLAR ETC
A Use for Intro		
B		√
C	√	√
D	√	
E	√	
F	√	
G	√	√
H		√
I	√	
J		√

I was so set on making sure that there were sufficient sources to support hydroelectric that I feel that I have now overdone the number of sources supporting it. Quite a few articles have arguments for both sides. Is that too confusing?

