

GRADE 11 PRACTICAL: THE KIDNEY MEMORANDUM**MARKS: 50****TIME: 2 PERIODS****PART 1: KIDNEY DISSECTION**

1.1.

1. *White* ✓ (1)2. *Three* ✓ (1)3. *Renal capsule* ✓ (1)4. **ANY TWO:** *Thin* ✓, *transparent* ✓, *light white* ✓ (2)

5.

- *Rooi* – 'n nier piramiede
- *Geel* – die nierbekken / nier pelvis
- *Groen* – 'n nierkelk
- *Blou* – die korteks
- *Wit* – die ureter

Neat longitudinal section	Red – renal pyramid	Yellow – Renal pelvis	Green – renal calyx	Blue - Cortex	Black - Ureter
Neatly down the length of the kidney	See if label has been correctly identified	See if label has been correctly identified	See if label has been correctly identified	See if label has been correctly identified	See if label has been correctly identified

(6)

6. *Cortex is a thin, brown layer just under the outer edge of the kidney**Medulla is a large, red/pink area in the middle of the kidney*

(2)

1.2. Kidney sketch criteria:

- ✓Heading
- ✓Labels in pen
- ✓Pencil sketch with no shading
- ✓Draw what can be seen and not a textbook sketch
- ✓✓Any two correct labels

(6)

1.3 Clean your dissection apparatus well.

- Throw the kidney and the newspaper away in the correct containers (not the dustbin).
- Wash your scalpel and dissection board with warm, soapy water and dry off with a alcohol cloth

(1)

TOTAL PART A: [20]

PART 2 – THEORY

1.3.

1.3.1. Proteins✓, proteins are too large✓ to fit through the filtration slits in the capsule (2)

1.3.2.

(a) Glucose is **100% / completely reabsorbed**✓ → it is the body's **most important energy source**✓. (2)

(b) Salts are **actively added to the filtrate**✓ in the distal convoluted tubule **through excretion**✓. There will therefore be more salt in the urine than in the filtrate because it is only added later AND water is reabsorbed which concentrates the salt (2)

1.3.3. If the person has **diabetes** ✓ (1)

1.3.4. No ✓, the water percentage in the urine is higher✓ than the percentage in the blood ✓ which shows that water is not being reabsorbed ✓ / urine is less concentrated / would have been more concentrated if the person was dehydrated (4)
(11)

1.4.

1.4.1. Ammonia / UREA ✓✓ (2)

1.4.2. To mimic the human body temperature✓ so that the urease / enzyme is at its optimal temperature✓ (2)

1.4.3. Acts as a control✓ setup (1)

1.4.4. The plasma contains urea, glucose✓ and proteins✓, but no glucose or proteins occurs in the urine✓ because it is reabsorbed✓ OR is too large to filter ✓ (4)
(9)

1.5.

1.5.1. Volume urine

(1)

1.5.2. **MARK FIRST TWO**

- Decide on a time✓/date/place to perform the investigation
- Decide on the apparatus✓/materials that will be needed
- Decide how the data will be recorded ✓
- Decide on the number of participants ✓
- Decide which factors will be kept constant✓/example of a factor that must be kept constant
- Decide on the composition of the samples ✓
- Develop a permission form for participants to sign ✓
- Get permission✓ from participants

(2)

1.5.3. **MARK FIRST TWO**

- The same room✓/environment/temperature
- The same apparatus✓
- The same person doing the investigation ✓
- No other sources of liquid intake in both groups✓
- The same type of beer ✓

(2)

1.5.4. **MARK FIRST ONE**

- They used a large sample✓/12 men/6 men in each group
- The average volume of urine produced was calculated✓

(1)

1.5.5. **ANY FOUR**

- Alcohol inhibits/reduces the secretion of ADH✓
- and causes the renal tubules✓/distal convoluted tubules and collecting ducts
- to be less permeable to water ✓
- Less water is reabsorbed into the blood✓
- A larger volume of urine is produced ✓

(4)

(10)

TOTAL PART 2: [30]

SUM TOTAL: [50]