

# Kidneys 2 MS

## QUESTION 1

| QUESTION    | ANSWER   | EXTRA INFORMATION   | MARKS |
|-------------|--|---|-------|
| a)          | in table, in sequence:<br>decrease<br>increase   | allow descriptions for increase / decrease  | 2     |
| b)          | No<br>older have lower % / less chance of rejection (than younger)<br>older have higher % / more chance of still working (after 5 years than younger)<br>or<br>Yes<br>older have lower % / less chance of surviving (at least 10 years than younger) (1) | allow figures<br><br>allow figures<br><br>allow in older patients kidney works for longer<br><br>allow max 1 mark if Yes<br>allow older people are more likely to die | 2     |
| Total marks |  |   | 4     |

## QUESTION 2

| QUESTION    | ANSWER  | EXTRA INFORMATION  | MARKS |
|-------------|---|--|-------|
| a)          | <p>glucose <input checked="" type="checkbox"/></p> <p>urea <input type="checkbox"/></p> <p>water <input type="checkbox"/></p> <p>sodium ions <input type="checkbox"/></p> <p>protein <input type="checkbox"/></p> | <p>all 3 correct = 2 marks</p> <p>2 correct = 1 mark</p> <p>0 or 1 correct = 0 marks</p> | 2     |
| b)i         | protein cannot pass through filter<br>or<br>protein (too) large<br>or<br>protein stays in the blood   |  | 1     |
| b)ii)       | reabsorbed  |  | 1     |
| c)i)        | less  |  | 1     |
| c)ii)       | more  |  | 1     |
| Total marks |   |  | 6     |

**QUESTION 3**

| QUESTION    | ANSWER   | EXTRA INFORMATION | MARKS  |
|-------------|--|-------------------|--------|
| a)          | mineral ions<br>water  |                   | 1<br>1 |
| b)i         | blood plasma   |                   | 1      |
| b)ii)       | dialysis fluid   |                   | 1      |
| b)iii)      | diffusion  |                   | 1      |
| b)iv)       | partially permeable  |                   | 1      |
| b)v)        | small  |                   | 1      |
| c)          | drug treatment is needed to<br>suppress<br>the immune system |                   | 1      |
| Total marks |  |                   | 8      |

**QUESTION 4**

| QUESTION    | ANSWER   | EXTRA INFORMATION  | MARKS      |
|-------------|--|--|------------|
| a)i)        | no effect / little effect  |  | 1          |
| a)ii)       | reduced  | ignore reference to later increase   | 1          |
| b)i         | more (re)absorption<br><br>or more (material) taken into<br>blood<br>of water  | do not allow if extra incorrect<br>reference to filtration made<br><br>allow only if linked to reabsorption<br>do not accept water if in a list of<br>substances | 1<br><br>1 |
| b)ii)       | ions in blood diluted<br>or concentration of ions<br>decreases<br>increased water reabsorption<br>or more water present in blood | do not allow if extra incorrect<br>reference to filtration made<br>accept sensible alternative<br>suggestion<br><br>eg reabsorption of ions disrupted            | 1<br><br>1 |
| Total marks |  |  | 6          |

**QUESTION 5**

| QUESTION | ANSWER   | EXTRA INFORMATION | MARKS |
|----------|--|-------------------|-------|
| a)i)     | too large to pass through the<br>filter                  |                   | 1     |
| a)ii)    | passed through the filter, then<br>reabsorbed into blood |                   | 1     |
| a)iii)   | water is reabsorbed from the<br>filtrate into the blood  |                   | 1     |
| a)iv)    | water, urea and sodium ions                              |                   | 1     |

|             |                   |  |   |
|-------------|-------------------|--|---|
| b)i         | less urine        |  | 1 |
| b)ii)       | more concentrated |  | 1 |
| Total marks |                   |  | 6 |

### QUESTION 6

| QUESTION    | ANSWER   | EXTRA INFORMATION  | MARKS |
|-------------|--|--|-------|
| a)          | (protein molecules too) big or larger than pore size   | allow cannot fit through the pores / hole / gaps                                     | 1     |
| b)i)        | diffusion  |  | 1     |
| b)ii)       | high to low concentration or high concentration in blood,<br><br>low concentration in dialysis fluid or down concentration gradient<br><br>or correct use of numbers   | ignore along gradient / across gradient<br><br>allow there is none in dialysis fluid | 1     |
| c)          | any value between 3.15 and 3.25 (inclusive)  |  | 1     |
| d)i         | any two from:<br><ul style="list-style-type: none"> <li>• kidney works all the time or dialysis works for short time or</li> <li>dialysis needs regular trips to hospital / regular treatment / long term treatment</li> <li>• kidney maintains correct concentration all the time or no build-up as between dialysis sessions</li> <li>• no need to regulate diet or correct example – eg low salt / low protein / low fluid intake as with dialysis</li> <li>• cheaper in the long term</li> </ul> | ignore enables an active life<br><br>accept kidney transplant is one off treatment   | 2     |
| d)ii)       | any two from:<br><ul style="list-style-type: none"> <li>• rejection / described or need to use immunosuppressants or need to take drugs for life</li> <li>• susceptible to other infections</li> <li>• hazards of operation / anaesthetic</li> <li>• shortage of donors / match</li> <li>• high initial cost</li> </ul>  | allow may need later replacement   | 2     |
| Total marks |  |  | 8     |