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Diffusion and active transport take place in the kidneys

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1

What is meant by active transport?

[2 marks]

Movement of molecules/ions/particles [1]
from (an area of) low concentration to a high concentration or against a concentration gradient [1]
requires energy or requires ATP [1]

TOP TIP : If you use the term concentration gradient, make sure you don't say 'along' a concentration. It's either up or down, or against, depending on whether you're taking about diffusion or active transport.

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2

Describe, as fully as you can, how urine is produced by the kidneys.

[5 marks]

Blood is filtered [1]
Large molecules not filtered [1]
Reabsorption of glucose [1]
Reabsorption of ions [1]
Reabsorption of water [1]
No reabsorption of urea/excess ions/excess water [1]
Glucose reabsorbed by diffusion [1] and active transport [1] Water reabsorbed by osmosis [1]

TOP TIP : This is pretty straight forward and just a question of remembering the steps in how the kidney works. This and the next question could easily be six mark questions, so well worth learning the terms and steps.

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3

A person with one type of kidney disease is found to have protein in his urine. Suggest an explanation for the presence of protein in the urine.

[2 marks]

Protein/large molecules or large particles filtered by the kidney [1]
and not reabsorbed [1]
or (diseased) kidney allowing large molecules/particles/protein to filter [1]

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A person with the kidney disease could be treated either by using a dialysis machine or by a kidney transplant operation.

Compare the advantages and disadvantages of these two methods of treatment.

Use your knowledge and understanding of the two methods in your answer

[4 marks]

Advantages of transplant over dialysis

- * no build-up of toxins/keeps blood concentration constant
- * prevents high blood pressure
- * don't need restricted diet/restricted fluid intake or time wasted on dialysis
- * blood clots may result from dialysis
- * infection may result from dialysis
- * with dialysis, blood may not clot properly due to anti-clotting drugs
- * cost issues (i.e. transplant cheaper)

Disadvantages of transplant over dialysis

- * rejection/problem finding tissue match
- * use of immunosuppressant drugs leading to other infections
- * dangers during operation