

**Kidneys and Excretion:**

- 1) What are the 6 main parts of the nephron? (6)
- 2) Describe the 3 layers of the glomerular filter? (3)
- 3) Describe the process of ultrafiltration? (3)
- 4) The 'bottleneck' effect in the glomerulus helps ultrafiltration. What causes this to happen? (2)
- 5) Draw a diagram to show the gross ultrastructure of the kidney and label the different parts? (5)
- 6) Describe the role of the loop of Henle and how it achieves this role? (4)
- 7) What are the vasa recta and why are they important? (3)
- 8) What is the significance of the tissue fluid in the kidney nephron? (2)
- 9) What is special about the walls of the ascending limb of the loop of Henle and why is this important? (2)
- 10) What is the main role of the proximal convoluted tubule? (2)
- 11) What is the role of the distal convoluted tubule? (2)
- 12) Give examples of substances reabsorbed into the blood from the filtrate and substances secreted from the blood into the filtrate? (3)
- 13) Why is only 50% of urea excreted through each pass through the nephrons? (2)
- 14) Describe which hormone regulates blood water potential, how it does this, where it is produced and its site and mode of action? (4)
- 15) Describe the various functions of the kidneys? (4)
- 16) What is diabetes insipidus? Suggest what the symptoms would be and possible causes? (3)
- 17) Suggest what problems may result from the syndrome of inappropriate ADH secretion (SIADH)? (2)
- 18) In a normal healthy individual, there should be no glucose or amino acids found in the urine. Explain why? (2)

- 19) What is different about the loops of Henle in camels and why is this important? (2)
- 20) What is the mechanism by which each of the following are reabsorbed in the proximal tubule? (3)
- a. Glucose
  - b. Urea
  - c. Amino acids
- 21) What is kidney failure? (2)
- 22) Describe the problems arising from kidney failure? (5)
- 23) Explain how dialysis works? (4)
- 24) What are the two types of dialysis and what are the differences between them? (4)
- 25) Compare the advantages and disadvantages of dialysis versus renal transplant? (4)
- 26) Explain how a urine sample can be tested for pregnancy? (3)
- 27) Name the technique which is used to test a urine sample for the presence of anabolic steroids and briefly explain how it works? (3)
- 28) A person's urine tested positive for glucose on a urine dipstick. What does this suggest? (1)
- 29) Bartter's syndrome affects the ion pumps on the ascending limb of the loop of Henle. Suggest how this results in polyuria and pH disturbances? (3)

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