**1.** What part of the kidney is affected by anti-diuretic hormone (ADH)?

A. Proximal convoluted tubule

B. Loop of Henle

C. Collecting duct

D. Glomerulus

(Total 1 mark)

**2.** Which part of the nephron shown below is impermeable to water molecules?



A. I

B. II

C. III

D IV

(1)

**3.** The plasma solute concentration, plasma antidiuretic hormone (ADH) concentration and feelings of thirst were tested in a group of volunteers. These graphs show the relationship between intensity of thirst, plasma ADH concentration and plasma solute concentration.



[Source: adapted from C T Thompson, *et al*., (1986), *Clinical Science London*, **71**, page 651]

(a) Identify the plasma ADH concentration at a plasma solute concentration of 300 mOsmol kg–1 using the line of best fit.

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(1)

(b) Compare intensity of thirst and plasma ADH concentration.

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(1)

(c) Outline what would happen to plasma solute concentration and ADH concentration if a person were to drink water to satisfy his/her thirst.

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(2)

(d) State **two** reasons why a person’s plasma solute concentration may increase.

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(2)

(Total 6 marks)

**4.** (a) Explain the control of ADH secretion.

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(5)

(Total 5 marks)

**5.**

(b) Explain how water balance is maintained in the blood.

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(5)