**Review Worksheet Answers: Cerebral Cortex Size, Prognathism and Dentition**

1: List features of the human cerebral cortex that are different from the brains of closely related Great Apes, and what this larger brain allows humans to do.

(5 marks)

*The human cerebral cortex is:*

* *Larger (1)*
* *Has many folds to increase surface area (1)*
* *Has an enlarged frontal lobe (1)*

*These allow for many additional neural connections (1) so that humans are better able to think, reason, plan, process and learn (1).*

2: How is the human skull adapted to house a larger brain?

(5 marks)

*More of the skull is used for the brain (1). Skull is higher (1) and more rounded (1) than in apes, and there are no brow ridges (1) and a higher forehead (1).*

3: What trend can be seen in cranial capacity of extinct hominins as they become more closely related to humans?

(1 mark)

*Cranial capacity increases. (1)*

4: Which evolved first, bipedalism or larger cranial size?

(1 mark)

*Bipedalism evolved first (1)*

5: What are endocasts, and what do they tell us about evolutionary trends in extinct human ancestors?

(6 marks)

*Endocasts are casts made of the inside of the skull (1) showing the folds or convolutions (1) on the surface of the brain (1). They show us a trend in increasing convolutions (1) and increasing frontal lobe size (1) as extinct human ancestors become more recent and more closely related to humans (1).*

6: Describe the evolutionary trends seen in dentition in extinct human ancestors.

(4 marks)

*The more closely related to humans and the more recent extinct human ancestors are, the more parabolic the dental arcade becomes (1). Canine teeth become smaller (1) and teeth in general reduce in size (1). The diastema is reduced or absent (1).*

7: You are a Doctor, and a patient with suspected thyroid disease comes into the clinic. She says she is tired, feels weak and has a large bulging mass in her throat.

1. What other signs might she show if she had *hyper*thyroidism?

(4 marks)

*She might show protruding eyeballs (1) elevated heart rate (1) weight loss or gain(1) increased appetite (1).*

1. What might be causing the hyperthyroidism?

(6 marks)

*She may have Graves’ Disease (1) where the immune system produces antibodies that attack and stimulate the thyroid (1). She may have iodine deficiency (1), causing overgrowth of the thyroid tissue to try to produce more hormone (1). She may have thyroiditis (1) inflammation of the thyroid that causes overproduction of hormones. (1)*

1. How would you make a diagnosis using a blood test – what would you test for and what result would you expect for hyperthyroidism? Why?

(4 marks)

*Test for TSH levels (1), which would be low (1). This is because the high levels of thyroxine produced inhibit the release of TSH (1) due to negative feedback. (1)*

1. What are some of the available treatment options?

(5 marks)

*Radioactive iodine therapy (1) to destroy thyroid cells (1), medication to prevent use of iodine to make thyroxine (1), surgery (1) to remove all or part of the thyroid.(1)*