Topic 5

The human nervous system

I can define the following terms….

1. Stimulus
2. Neurotransmitter
3. Accommodation, with regards to the eye
4. Myopia
5. Hyperopia
6. Vasodilation and vasoconstriction

I can identify…...

1. What makes up the central nervous system (CNS)
2. The steps of the nervous pathway
3. Examples of receptors and effectors
4. Examples of reflex actions
5. The cerebral cortex, cerebellum and medulla on a diagram of the brain.
6. The main structures of the eye on a diagram.
7. The role of the retina in the eye
8. Three new technologies to treat problems in the eye
9. Where body temperature is monitored and controlled using receptors sensitive to the temperature of the blood

I can describe…..

1. The role of the central nervous system (CNS)
2. The steps in a simple reflex action such as a pain-withdrawal reflex, including the different types of neurones.
3. How an impulse passes from one neurone to the next across a synapse
4. The role of the cortex, cerebellum and medulla
5. The methods used by neuroscientists to map the regions of the brain to particular functions
6. The role of optic nerve, sclera and cornea

I can explain….

1. The importance of reflex actions
2. How the various structures in a reflex arc relate to their function
3. some of the difficulties of investigating brain function and treating brain damage and disease
4. How the muscular iris controls the size of the pupil and the amount of light reaching the retina
5. How ciliary muscles and suspensory ligaments can change the shape of the lens to focus light onto the retina
6. How thermoregulatory mechanisms lower or raise body temperature if we get too hot or cold

I can…

1. **Plan an investigation into the effect of a factor on human reaction time.**
2. Evaluate the benefits and risks of procedures carried out on the brain and nervous system.
3. Interpret ray diagrams demonstrating how spectacle lenses correct myopia and hyperopia.

Human endocrine system

I can define the following terms….

1. Homeostasis
2. Hormone
3. ovulation

I can identify…...

1. Differences and similarities between the nervous system and the endocrine system
2. How the endocrine system transports hormones to a target organ
3. The position of the pituitary gland, pancreas, thyroid, adrenal gland, ovary and testes on a diagram of the human body
4. Where blood glucose concentration is monitored and controlled
5. Risk factors for Type 2 diabetes
6. Different ways water leaves the body
7. Where insulin and glucagon are produced
8. Where ADH is produced
9. How puberty is initiated
10. Where Oestrogen, progesterone, LH and FSH are made
11. A number of different hormonal and non-hormonal methods of contraception
12. Two barrier methods for contraception
13. Social and ethical issues associated with IVF treatments
14. Where adrenaline is produced
15. Where thyroxine is produced

I can describe…..

1. What the characteristic symptoms Type 1 diabetes are and how it is normally treated
2. Treatments for Type 2 diabetes
3. How the liver converts excess amino acids to urea
4. Where testosterone is made its role
5. The steps of In Vitro Fertilisation (IVF) treatment

I can explain….

1. The importance of homeostasis in maintaining optimal conditions
2. The steps that lead to blood glucose concentrations returning to ‘normal’ when they get to high or to low
3. The cause of Type 1 diabetes
4. The cause of Type 2 diabetes
5. How glucagon interacts with insulin in a negative feedback cycle to control blood glucose levels in the body.
6. Problems for body cells if they lose or gain too much water by osmosis
7. How the kidney nephron operates to produce urine by filtration of the blood and selective reabsorption of useful substances such as glucose, some ions and water.
8. How that the water level in the body is controlled by the hormone ADH
9. How a kidney dialysis machine works
10. The roles of Oestrogen, progesterone, LH and FSH in the menstrual cycle and how they interact together using negative feedback
11. How oral contraceptives work so that no eggs mature
12. How injection, implant or skin patches inhibit the maturation and release of eggs for a number of months or years
13. How spermicidal agents act as a method of contraception
14. How a 'fertility drug' for women helps her become pregnant
15. The roles of thyroxine and adrenaline in the body as negative feedback systems.

I can…

1. Evaluate the advantages and disadvantages of treating organ failure by mechanical device or transplant
2. Evaluate from the perspective of patients and doctors the methods of treating infertility (eg it is very emotionally and physically stressful, the success rates are not high, it can lead to multiple births which are a risk to both the babies and the mother)
3. Interpret and explain simple diagrams of negative feedback control.

Plant hormones

I can identify…...

1. the role of gibberellins as a plant hormone
2. the role of ethene as a plant hormone

I can describe…..

1. How auxins are used in agriculture
2. How gibberellins are used in horticulture
3. What gravitropisms and phototropisms are

I can explain….

1. How ethene is used in the food industry
2. How gravitropisms and phototropisms growth responses in roots and shoots are coordinated using auxin

I can…

1. **Plan how to investigate the effect of light or gravity on the growth of newly germinated seedlings, recording results as both length measurements and as careful, labelled biological drawings to show the effects**