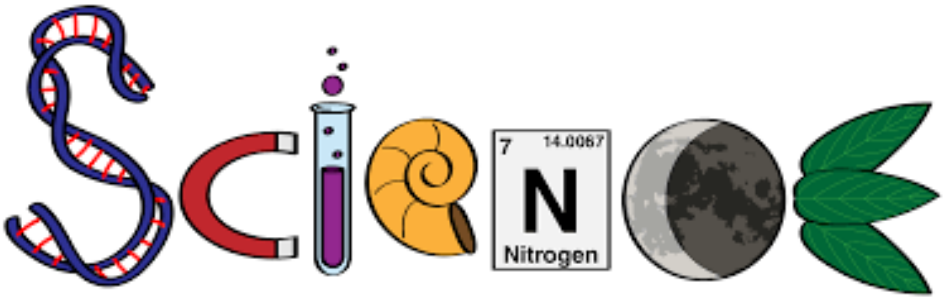
Meopham School

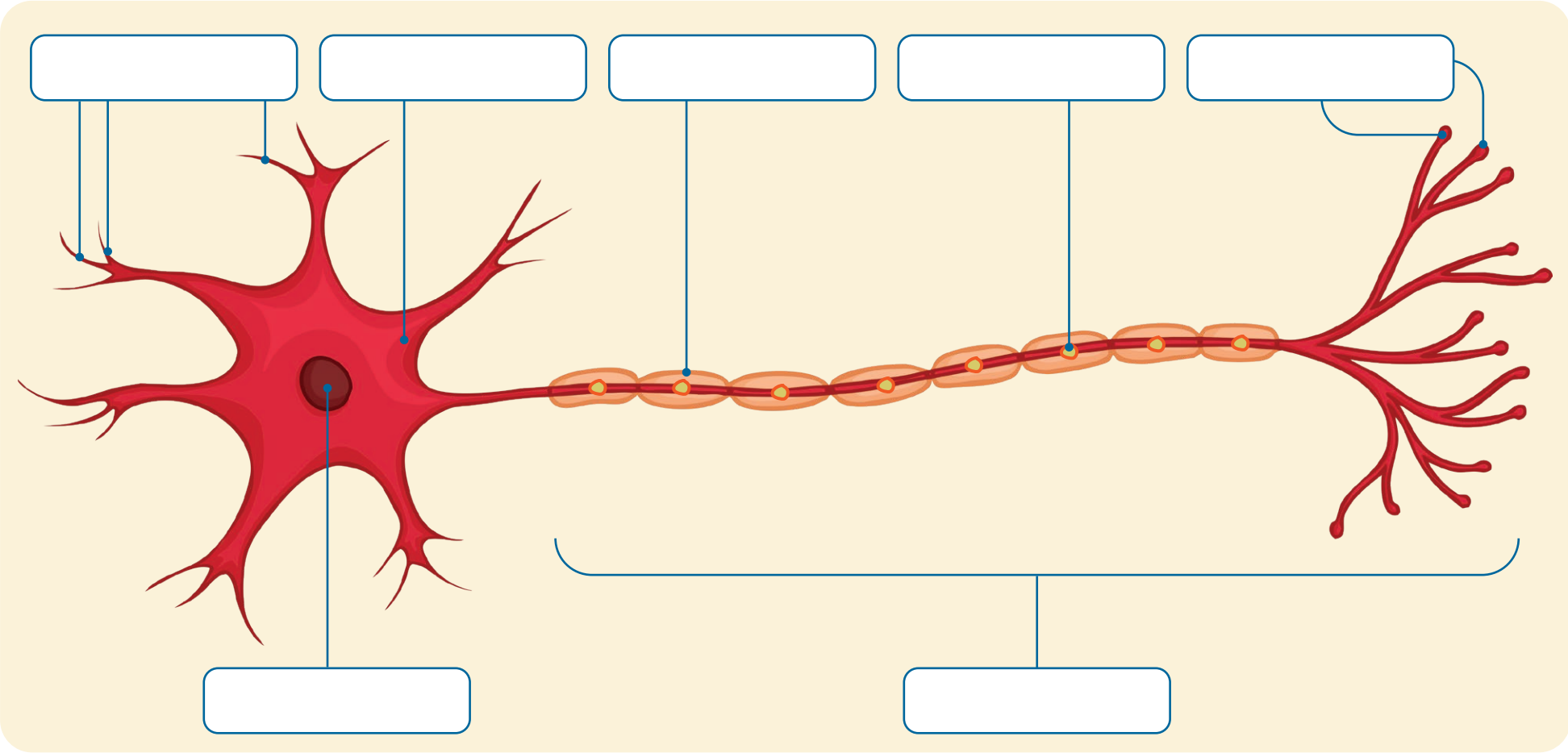


HOMEWORK BOOKLET

B5 Higher

Parts of a Neuron

Look at the word bank. Rewrite the labels in the proper boxes so that the neuron is correctly labelled.



Word bank

nucleus axon myelin sheath dendrites

cell body Schwann cell axon terminals

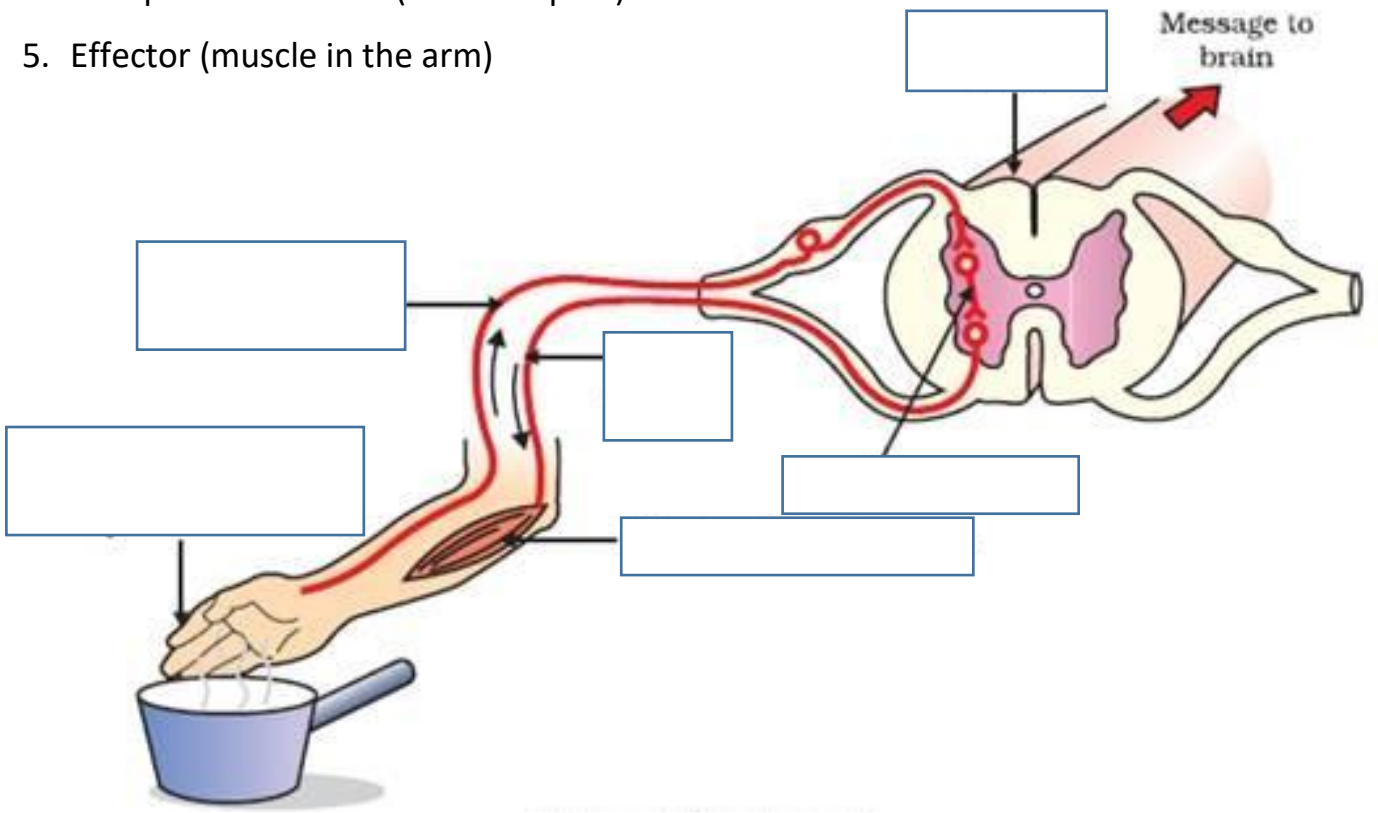
Homework 1

The Reflex Arc

Homework 1

Use the keywords to label the reflex arc:

1. Sensory neurone
2. Spinal cord (CNS)
3. Relay neurone
4. Receptors in the skin (heat and pain)
5. Effector (muscle in the arm)



Questions:

A) Explain why reflex arcs are an automatic behaviour?

B) Give some examples of other reflexes:

C) Analyse the reasons why reflexes are useful to us?

Homeostasis and Response
Multiple Choice Questions

Homework 1

Set 1

Tick **one** box.

1. What is the scientific term for a nerve cell?
   - A. hormone ☐
   - B. impulse ☐
   - C. neurone ☐
   - D. reflex ☐

2. Which of these glands produces the hormone oestrogen?
   - A. adrenal gland ☐
   - B. ovary ☐
   - C. pituitary gland ☐
   - D. testis ☐

3. Which of these is kept at a constant level using homeostasis?
   - A. blood glucose level ☐
   - B. muscle mass ☐
   - C. bone density ☐
   - D. percentage body fat ☐

4. Which of these is **not** a part of a reflex arc?
   - A. decision ☐
   - B. effector ☐
   - C. receptor ☐
   - D. stimulus ☐

5. Which of these hormones stimulates sperm production?
   - A. adrenaline ☐
   - B. insulin ☐
   - C. testosterone ☐
   - D. thyroxine ☐

6. Which of these organs contains a receptor which detects changes in light levels?
   - A. ear ☐
   - B. eye ☐
   - C. skin ☐
   - D. nose ☐

7. Which of these is a method of contraception which requires a surgical procedure?
   - A. abstinence ☐
   - B. contraceptive pill ☐
   - C. spermicide ☐
   - D. sterilisation ☐

8. Which of these is an organ involved in keeping the blood glucose level constant?
   - A. heart ☐
   - B. kidneys ☐
   - C. lungs ☐
   - D. pancreas ☐

9. Which of these methods of contraception is hormonal?
   - A. condom ☐
   - B. contraceptive pill ☐
   - C. diaphragm ☐
   - D. sterilisation ☐

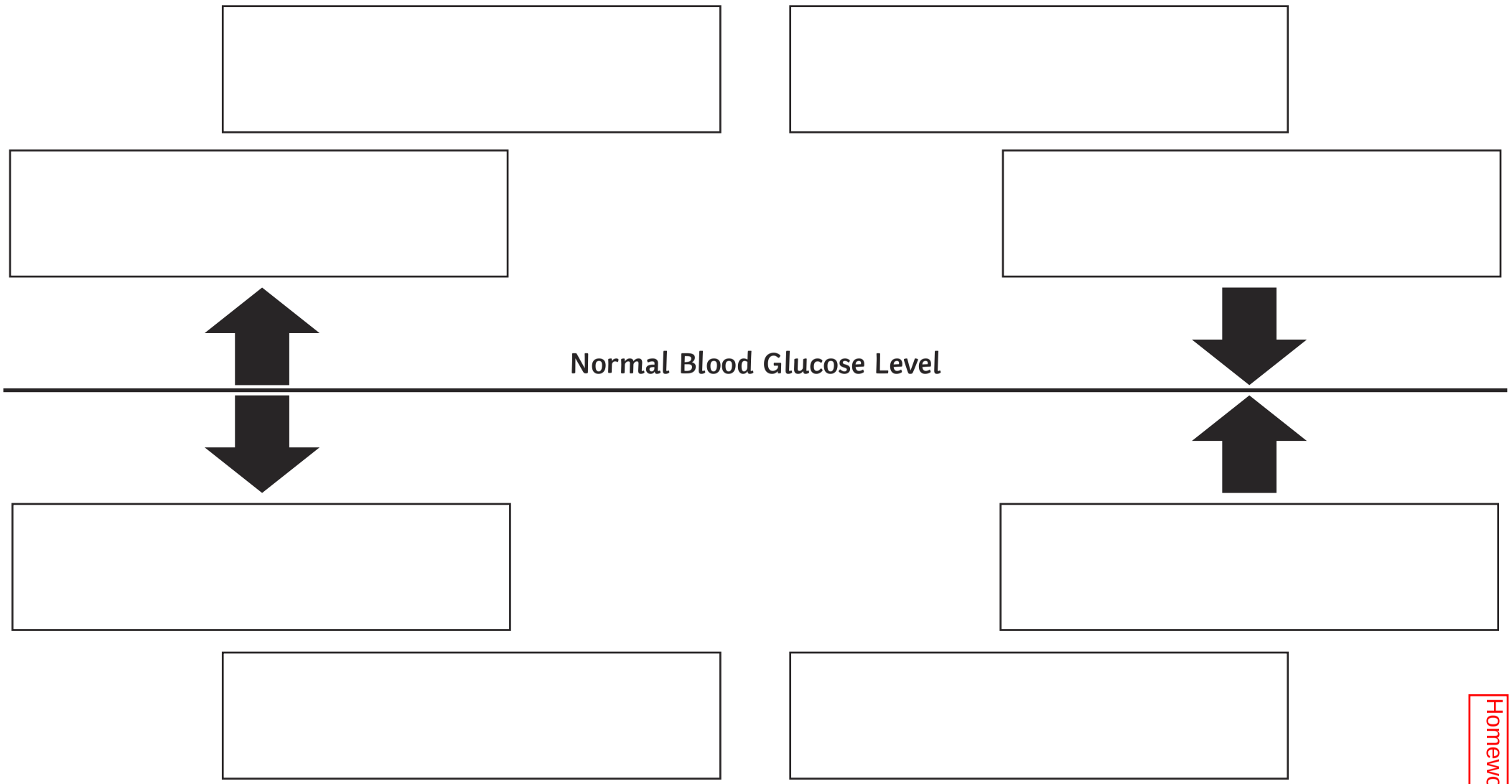
10. Which of these is a risk factor for Type 2 diabetes?
    - A. blood type ☐
    - B. eye colour ☐
    - C. height ☐
    - D. obesity ☐

Receptors detect an increase in blood glucose.	Receptors detect a decrease in blood glucose.	The liver converts stored glycogen into glucose.
The pancreas secretes **insulin**.	The liver adds glucose to the blood.	The liver removes excess glucose from the blood.
The pancreas secretes **glucagon**.	The excess glucose is converted into glycogen and stored in the liver.	

Homework 2

Controlling Blood Glucose: **Negative Feedback Loop**

put them into the correct positions on the negative feedback loop below to show the sequence of events in the body to control blood glucose levels.



Homework 2

Controlling Blood Glucose: **Negative Feedback Loop - Answer Sheet**

The pancreas secretes **insulin**.

The liver removes excess glucose from the blood.

Receptors detect an increase in blood glucose.

The excess glucose is converted into glycogen and stored in the liver.

Normal Blood Glucose Level

Receptors detect a decrease in blood glucose.

The liver adds glucose to the blood.

The pancreas secretes **glucagon**.

The liver converts stored glycogen into glucose.

Homework 2

Homework 2

Hormones in the Menstrual Cycle
Sequencing Cards

Each of the statements describes a stage in the menstrual cycle. Number the statements in order.

Progesterone is also produced in the ovaries.

This hormone allows the uterus lining to be maintained and inhibits the production of **luteinising hormone** (LH) and **follicle stimulating hormone** (FSH).

Follicle stimulating hormone (FSH) is a hormone produced by the pituitary gland.

This causes the lining of the uterus to thicken, stimulates the production of **luteinising hormone** (LH) and inhibits the production of **follicle stimulating hormone** (FSH).

Oestrogen is produced in the ovaries.

Luteinising hormone (LH) is produced by the pituitary gland. This stimulates the release of a mature egg cell from the ovary. This is called ovulation.

This causes an egg to mature in one of the ovaries and stimulates the production of **oestrogen**.

Homeostasis and Response
Multiple Choice Questions

Homework 2

Set 2

Tick **one** box.

1. Which neurone is responsible for sending a nerve impulse from the receptor to the central nervous system?

   A. motor ☐
   B. relay ☐
   C. sensory ☐
   D. specialised ☐

2. Which of these methods of contraception will also protect from sexually transmitted infections when used correctly?

   A. condom ☐
   B. contraceptive implant ☐
   C. contraceptive pill ☐
   D. spermicide ☐

3. Which of these is **not** part of the reflex arc which occurs as a result of stepping on a pin with your foot?

   A. conscious part of the brain ☐
   B. leg muscles ☐
   C. sensory neurone ☐
   D. spinal cord ☐

4. Which gland is also known as the 'master gland'?

   A. adrenal ☐
   B. ovary ☐
   C. pituitary ☐
   D. thyroid ☐

5. Which of these changes occurs in response to an increase in the production of testosterone during puberty?

   A. breast growth ☐
   B. maturation of eggs ☐
   C. release of eggs ☐
   D. sperm production ☐

6. Which of these is a part of the central nervous system?
   - A. brain ☐
   - B. eye ☐
   - C. motor neurone ☐
   - D. sensory neurone ☐

7. What happens during ovulation?
   - A. breakdown of the lining of the uterus ☐
   - B. growth of the foetus ☐
   - C. maturation of the egg in the ovary ☐
   - D. release of the egg from the ovary ☐

8. Which of these is a specialised feature of neurones?
   - A. cell membrane ☐
   - B. chloroplasts ☐
   - C. myelin sheath ☐
   - D. nucleus ☐

9. Which of these is true about responses brought about by the nervous system?
   - A. they affect the whole body ☐
   - B. they transfer information through the blood ☐
   - C. they are long-lasting ☐
   - D. they are rapid ☐

10. Which of these is true about Type 2 diabetes?
    - A. it is caused by the immune system attacking cells which produce insulin ☐
    - B. it is contagious ☐
    - C. it is controlled with a healthy balanced diet and exercise ☐
    - D. it is treated with insulin injections ☐

Homeostasis and Response
Multiple Choice Questions

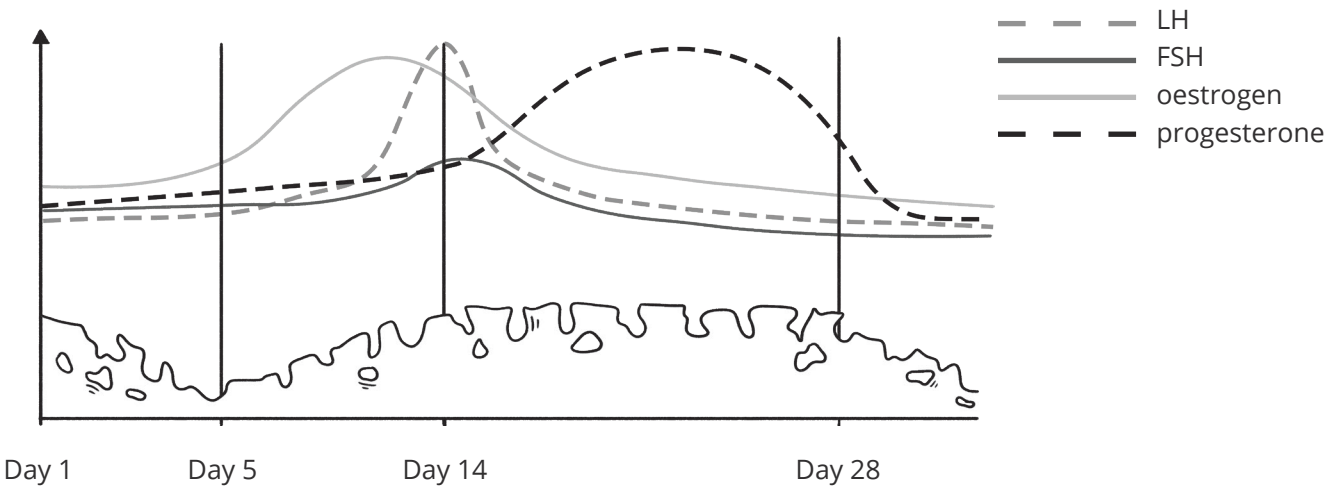
Homework 3

Set 3 (HT Only)

Tick **one** box.

1. How can the level of luteinising hormone (LH) be described during ovulation?
   Use **Figure 1** to answer this question.

Figure 1



A. at a peak (maximum) level ☐
B. at a steady plateau ☐
C. decreasing ☐
D. increasing ☐

2. Which of these glands produces the hormone thyroxine?

A. adrenal ☐
B. ovary ☐
C. pituitary ☐
D. thyroid ☐

3. What is the name of the hormone released by the pancreas when the blood glucose level becomes too low?

A. adrenaline ☐
B. glucagon ☐
C. glycogen ☐
D. insulin ☐

4. What does the term IVF stand for?

A. ideal vital fertilisation ☐
B. intravenous fertilisation ☐
C. in vital fertilisation ☐
D. in vitro fertilisation ☐

Homework 3

5. Which of these is **not** an example of a negative feedback loop?
   - A. blood clotting ☐
   - B. blood glucose regulation ☐
   - C. maintaining a constant body temperature ☐
   - D. thyroxine level regulation ☐

6. Which combination of hormones is given to a woman as part of IVF to stimulate the maturation of several eggs at once?
   - A. follicle stimulating hormone and luteinising hormone ☐
   - B. follicle stimulating hormone and testosterone ☐
   - C. luteinising hormone and progesterone ☐
   - D. progesterone and thyroxine ☐

7. Which of these is **not** an effect of the release of the hormone adrenaline?
   - A. increased digestion of starch ☐
   - B. increased glucose delivery to the brain and muscles ☐
   - C. increased heart rate ☐
   - D. increased oxygen delivery to the brain and muscles ☐

8. In the menstrual cycle, what happens when the level of progesterone drops following ovulation?
   - A. an increase in the level of oestrogen ☐
   - B. breakdown of the lining of the uterus ☐
   - C. maintenance of the lining of the uterus ☐
   - D. stimulation of the release of an egg from the ovary ☐

9. Which of these is a risk associated with IVF treatment?
   - A. high success rate ☐
   - B. infertility ☐
   - C. multiple births ☐
   - D. surrogacy ☐

10. In a 'fight or flight' response, which of these is the effector?
    - A. adrenal glands ☐
    - B. brain ☐
    - C. central nervous system ☐
    - D. pancreas ☐

Treating Infertility

Homework 3

Methods to overcome infertility can be split into three main groups.
Describe and give an example of each.

Medicines_____

_____

Surgical Procedures_____

_____

Assisted Conception_____

_____

Describe how **medicines** can be used to overcome the problems below.

Problem: infrequent or absent ovulation

Solution: _____

_____

_____

Problem: low sperm count

Solution: _____

_____

_____

Describe how **surgical procedures** can be used to overcome the problems below.

Problem: scarred oviducts

Solution: _____

_____

_____

Problem: blocked sperm ducts

Solution: _____

_____

_____

BEYOND SCIENCE

Describe **two** methods of **assisted conception** and explain how they can be used to treat infertility.

Describe **three** factors that should be considered when deciding whether to use **intrauterine insemination (IUI)** to aid conception.

1.

2.

3.

Describe the stages in the process of **in vitro fertilisation (IVF).**

Evaluate the use of **IVF** to treat infertility.

Homework 3

The Regulation of Metabolic Rate

Read through each of the statements below and then put them into the right order at the bottom using their respective letters

G	Receptors in the hypothalamus detect the fall in energy
I	Thyroxine causes the metabolic rate to increase, allowing cells to transfer additional energy
V	The cells now have enough energy, which is detected by the hypothalamus
T	TSH binds to the thyroid gland and causes it to release thyroxine into the blood
N	There is a fall in the energy which is available to cells
A	The hypothalamus causes the pituitary gland to release TSH into the blood

	E						E