



Sacred Heart High School

# APPLIED SCIENCE

Biology Transition Task

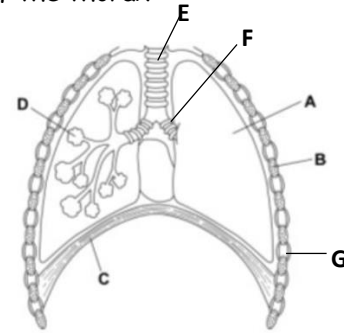
# B3 REVISION – CHAPTER 1 – EXCHANGE OF MATERIALS

Describe active transport:

How is it different to diffusion:

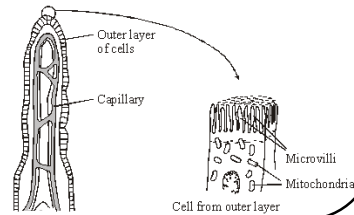
Label the structures of the thorax

- A:
- B:
- C:
- D:
- E:
- F:
- G:



Draw a picture to explain how osmosis works:

Describe the how nutrients are absorbed in the gut



Describe gas exchange in the lungs during inspiration:

Describe gas exchange in the lungs during exhalation:

Describe the effects of osmosis in animal cells:

Describe the effects of osmosis in plant cells:

Explain how gaseous exchange takes place in plants:

Describe transpiration:

## KEY WORDS:

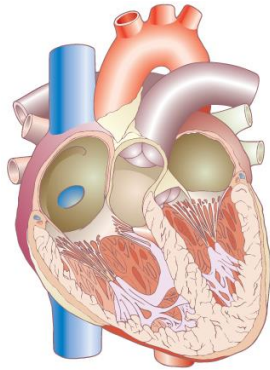
Partially permeable	Capillaries	Vacuum
Osmosis	Breathing	Trachea
Active transport	Breathing systems	Villi
Solute	Thorax	Evaporation
Exchange surface	Abdomen	Cuticle
Ventilated	Diaphragm	Guard cells
Gaseous exchange	Intercostal muscle	Root hair cells
Alveoli	Negative pressure	Transpiration
	Positive pressure	Whitling

## ASSESSMENT:



# B3 REVISION – CHAPTER 2 – TRANSPORTING MATERIALS

Label the structures of the heart



State the parts that make up blood:

What substances are transported by the blood:

Explain the function of:  
Red blood cells:

White blood cells:

Describe how the structure of each blood vessel helps it carry out its function:

Artery:

Vein:

Capillary

Describe what artificial blood is and why it is used instead of real blood:

Describe what an artificial heart is and why it is used instead of a real heart:

Transport in plants

**KEY WORDS:**

Transport system	Oxygenated	Pulmonary artery	Urine
Blood circulation	Arteries	Aorta	Biconcave discs
system	Veins	Valves	Pigment
Blood vessels	Coronary arteries	Stents	Haemoglobin
Heart	Atria	Plasma	Oxyhaemoglobin
Blood	Vena cava	Red blood cells	Transfusion
Double	Deoxygenated	White blood cells	Donors
circulation	Pulmonary vein	Plasma	Phloem
	Ventricles	Urea	Xylem

**ASSESSMENT:**



# B3 REVISION – CHAPTER 3 – KEEPING INTERNAL CONDITIONS CONSTANT

## Ions and water loss:

Explain the function of the kidneys:

Explain how the kidneys work:

Explain what dialysis is and why it is needed:

Explain kidney transplants and the risk of rejection:

## Thermoregulation:

Describe how the body reacts when it is cold:

Describe how the body reacts when it is hot:

Draw the thermoregulation feedback loop:

## Blood glucose:

Describe how insulin controls blood sugar levels in the body:

Draw the feedback loop of blood glucose control:

Explain what diabetes is and the different types people can have:

State the internal conditions that the body needs to maintain:

### KEY WORDS:

Liver  
Bladder  
Selective reabsorption  
Urobilins  
Dialysis  
Kidney transplant

Dialysis machine  
Recipient  
Immune response  
Immunosuppressant drugs  
Xenotransplantation  
Core body

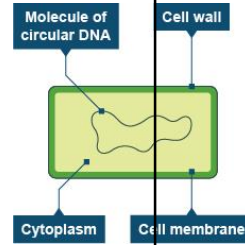
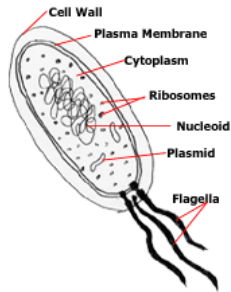
temperature  
Thermoregulatory centre  
Hypothermia  
Insulin  
Type 1 diabetes  
Glucagon

### ASSESSMENT:



# B2 REVISION – CHAPTER 1 – Cell, Tissues & Organs

## Bacteria & Yeast



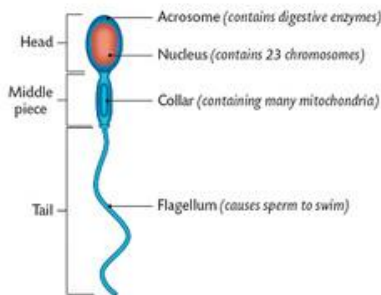
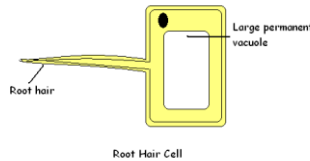
Where is the genetic material in a bacteria cell?  
How many cells make up yeast?

## Animal & Plant Cells

Structure	Purpose	Plant/Animal/Both
	Controls the cells activities	
Cytoplasm		
		Both
Mitochondria		
Ribosomes	Protein synthesis takes place	
		Plant
	Contain chlorophyll, absorb light energy to make food	
Vacuole		

## Specialised Cells

Cells are specialised to carry out a specific function. The structure gives a clue to its function.



If a cell has many ribosomes it is making a lot of protein, which type of cell might it be?

## Diffusion

Is how dissolved substances and gasses move into and out of cells.

### KEY WORDS:

Gland cells  
Nucleus  
Algal cell  
Cellulose  
Chloroplast

### ASSESSMENT:



# B2 REVISION – CHAPTER 3 – Enzymes

## Proteins, Catalysts & Enzymes

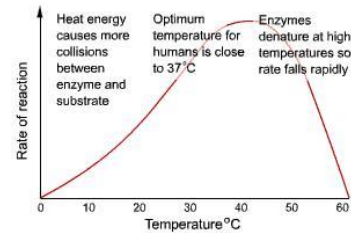
What are protein molecules made of?

Give 3 examples of what proteins can be?

What are enzymes and what do they do?

The \_\_\_\_\_ in a reaction can be held in the active site and either be connected to another molecule or be broken down.

## Factors Affecting Enzyme Action.



If the temperature gets too hot the enzyme stops working, the enzyme becomes \_\_\_\_\_.  
Each enzyme works best at a particular \_\_\_\_\_ value.

## Making use of Enzymes

Biological detergents contain \_\_\_\_\_ and \_\_\_\_\_ that digest food stains.

Isomerase is used to convert glucose syrup into fructose syrup why?

In industry enzymes are used to bring about reactions at normal temperature and pressures.

### High Tech Enzymes

Give 2 advantages of the fact that biological washing powders can be used at lower temperatures.

Some enzymes are used in medicines to diagnose, control or even cure diseases.

Disadvantages of Enzymes.

Give 2 disadvantages of enzymes.

## Enzymes in Digestion

Enzyme	Reaction
Amylase	
Protease	
Lipase	

## Speeding up Digestion

What acid is produced from glands in the stomach?

Which 2 enzymes work in the small intestine?

The liver produces \_\_\_\_\_ that is stored in the \_\_\_\_\_.

What does bile do?

### KEY WORDS:

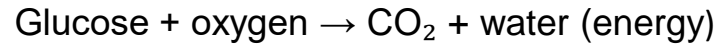
Denatured  
Bile  
Enzymes  
Isomerase  
Carbohydrase  
Amylase

### ASSESSMENT:



## B2 REVISION – CHAPTER 4 – Energy from Respiration

### Aerobic Respiration



Where do most of the reactions for aerobic respiration take place?

Does aerobic respiration just take place in animals?

The energy released may be used by the organism to:

Build larger \_\_\_\_\_ from smaller ones.

Enable \_\_\_\_\_ contraction in animals.

Maintain a constant body temperature in colder surroundings in mammals and birds.

### Effect of exercise on the body.

Why do muscles need more energy when you exercise?

What needs to be transported to the muscles?

To do this what changes take place?

What do muscles store glucose as?

If you need more energy when you exercise what other two things will you also need more of?

What also will you need to remove more of?

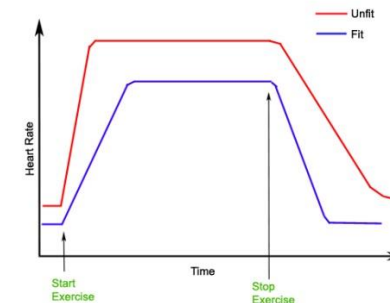
### Anaerobic Respiration

When your muscles cannot get enough oxygen for aerobic respiration, they start to respire anaerobically.

What acid is produced?

Is more or less energy released from glucose in anaerobic respiration?

When muscles respire anaerobically they build up an \_\_\_\_\_ debt.



**KEY WORDS:**  
Mitochondria  
Lactic acid  
Glycogen  
Oxygen debt

**ASSESSMENT:**



# B2 REVISION - CHAPTER 2 - Organisms in the Environment

## Limiting Factors

Name the limiting factors and explain why the factor is limiting.

## Photosynthesis

What is the equation for photosynthesis?

What is used to test for starch?

What is the by-product of photosynthesis?

## How Plants use Glucose

Converted into \_\_\_\_\_ for storage.

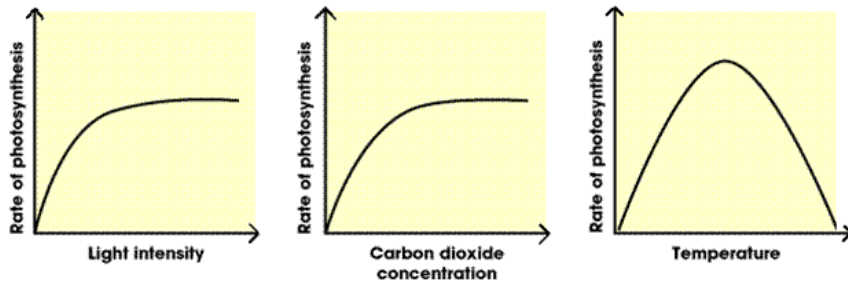
Used for respiration.

Converted into \_\_\_\_\_ and oils for storage.

Used to produce \_\_\_\_\_ which strengthens cell walls.

What else do plants and algal cells need to produce proteins?

Where do plants and algal cells get this supply from?



These 3 graphs show the limiting factors for photosynthesis. Explain what each graph shows.

### KEY WORDS:

Glucose  
Independent Variable  
Dependent Variable  
Mineral ion  
Nitrate ion

### ASSESSMENT:





## B2 REVISION – CHAPTER 2 cont. –Organisms in the Environment

### Making the most of photosynthesis.

What factors must be controlled in a greenhouse to improve plant growth?

### Organisms in their Environment

Temperature:

Availability of nutrients:

Amount of light:

Availability of water:

Availability of oxygen:

Availability of CO<sub>2</sub>

### How valid is the data?

A measurement is \_\_\_\_\_ if the original experimenter creates the investigation using the same method and equipment and obtains the same results.

A measurement is \_\_\_\_\_ if the investigation is repeated by another person or by using different equipment or techniques and the same results are obtained.

If the sample is too small it may not be \_\_\_\_\_.

### Measuring Distribution of Organisms.

What would you use for a random quantitative sampling?

Why is sample size important?

What is the range of a set of numbers?

What is the mean of a set of numbers?

What is the median of a set of numbers?

**KEY WORDS:**  
Repeatable  
Reproducible  
Representative  
Valid  
Variable  
Quadrat

**ASSESSMENT:**



## Responding to change

The nervous system has receptors to detect stimuli.

List the sense organs and the stimuli they detect.

Neurons are nerve cells which are found in nerves, which carry electrical impulses.

## Hormones and the menstrual cycle.

Follicle stimulating hormone (FSH) is made by the pituitary gland and causes eggs to mature and oestrogen to be produced.

Oestrogen is produced by the ovaries and inhibits the further production of FSH. Luteinising hormone (LH) also made by the pituitary gland and stimulates the mature egg to be released from the ovary (ovulation).

## The artificial control of fertility

Contraceptive pills contain \_\_\_\_\_ and/or \_\_\_\_\_ to inhibit FSH. FSH can also be used to help a woman produce \_\_\_\_\_. Fertility treatment can be used to prevent pregnancy (e.g. the contraceptive pill), or increase chance of pregnancy (e.g. IVF)

Issues involved in fertility treatment.

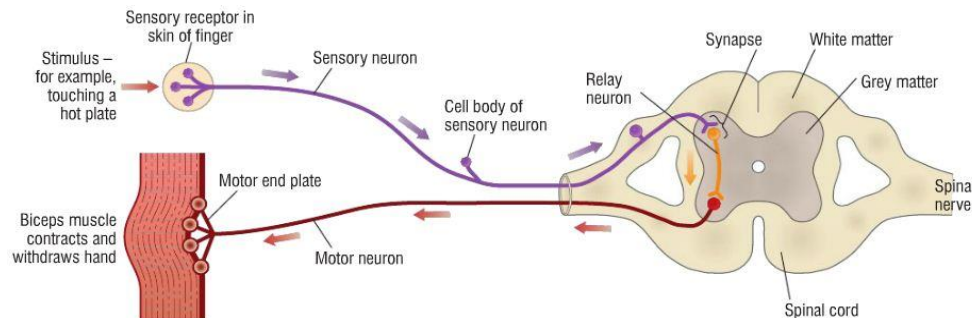
Advantages	Disadvantages

## Reflex Actions

The main six stages of a reflex action are:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

At the junction between two neurons is a synapse, chemicals transmit the impulse across this gap.



**KEY WORDS:**  
 Progesterone  
 Reflex  
 Synapse  
 Oestrogen  
 Pituitary gland  
 Receptor  
 Neuron

**ASSESSMENT:**



# B1 REVISION – CHAPTER 2 continued – Coordination and control

## Controlling Conditions

The body carefully controls its internal environment. What are 4 of the internal conditions that are controlled?

Why must we keep our temperature constant?

What organ controls the level of sugar in our blood?

## Using Hormones in Women

Many use the contraceptive pill to prevent unwanted pregnancies, and also to plan when they have a baby. Hormones can also be used to help women get pregnant. Older women can use hormone treatment to allow them to have babies later in life.

Side effects are possible in some women if they take hormones for a long time.

What ethical concerns are there about using fertility drugs?

## Using Hormones in Plants

Plant hormones can be used by farmers and gardeners.

Weedkillers can be used, rooting powder to encourage roots on cuttings, and some hormones are used to help some fruit to ripen.

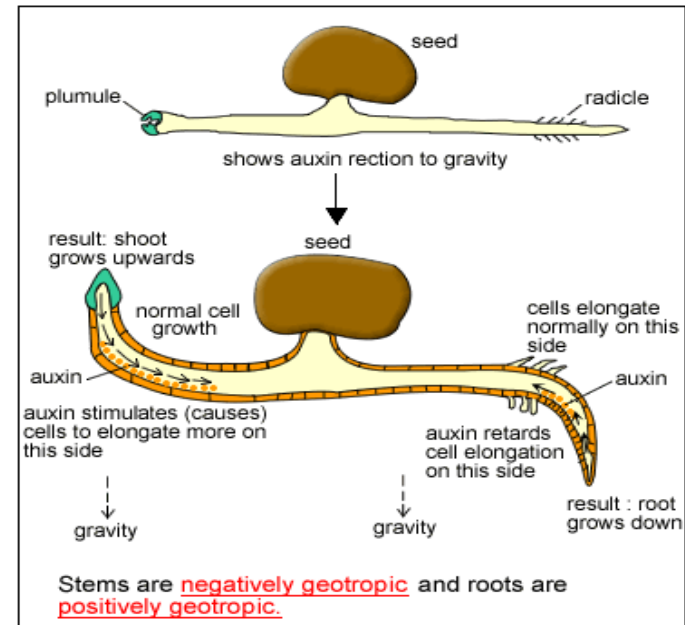
What damage to the environment can the use of plant hormones cause?

## Hormones and the control of plant growth

Plants are sensitive to light gravity and moisture. Plant shoots grow towards light. This response is \_\_\_\_\_.

Roots grow down towards gravity. This response is \_\_\_\_\_.

Roots also grow towards water. Auxin is the hormone which controls phototropism and gravitropism.



**KEY WORDS:**  
Gravitropism (geotropism)  
Auxin  
Phototropism  
Enzyme  
Pancreas

**ASSESSMENT:**

