

## UNIT 1 TASK

### Photosynthesis Match the Terms

Match the correct letters and numbers:

- a) the splitting of water using light energy
  - b) photosynthetic pigments are found here
  - c) a fate of light other than absorption
  - d) another name for Carbon Fixation
  - e) a structural carbohydrate
  - f) a storage carbohydrate
  - g) ATP is made from
  - h) the organelle where photosynthesis occurs
  - i) an accessory pigment
  - j) the CO<sub>2</sub> acceptor
  - k) the Hydrogen acceptor
  - l) a limiting factor
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- 1) temperature
  - 2) starch
  - 3) NADP
  - 4) RuBP
  - 5) xanthophyll
  - 6) grana
  - 7) reflection
  - 8) chloroplast
  - 9) cellulose
  - 10) Calvin Cycle
  - 11) ADP + Pi
  - 12) photolysis

## Respiration Match the Terms

Match the correct letters and numbers:

- a) the organelle where aerobic respiration occurs
  - b) the splitting of glucose into pyruvic acid
  - c) the location of the Krebs's cycle
  - d) the location of the Cytochrome system
  - e) the Hydrogen acceptor
  - f) 2C product of anaerobic respiration in plants
  - g) 3C product of anaerobic respiration in animals
  - h) ATP is made up of
  - i) The number of ATP molecules produced from aerobic respiration
  - j) The number of ATP molecules produced from anaerobic respiration
  - k) The final Hydrogen acceptor
  - l) ATP is required for many processes including
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- 1) matrix
  - 2) ADP + Pi
  - 3) muscle contraction
  - 4) cristae
  - 5) 2ATP
  - 6) oxygen
  - 8) mitochondrion
  - 9) NAD
  - 10) 38ATP
  - 11) lactic acid
  - 12) glycolysis

## RNA & PROTEIN SYNTHESIS MATCH THE TERMS

Match the correct letters and numbers:

- a) the sugar in RNA
- b) the basic units of DNA and RNA
- c) the base which pairs with uracil
- d) the base which pairs with guanine
- e) the site of transcription
- f) the basic units of protein
- g) this type of bond joins bases together
- h) this type of bond joins amino acids together
- i) this molecule picks up specific amino acids
- j) the site of protein synthesis
- k) proteins are processed and packaged here
- l) proteins are transported in these structures

- 1) cytosine
- 2) peptide
- 3) adenine
- 4) ribose
- 5) nucleus
- 6) vesicles
- 7) hydrogen
- 8) nucleotides
- 9) tRNA
- 10) golgi apparatus
- 11) amino acids
- 12) ribosome

### Photosynthesis Passage

In chloroplasts, the granum is a stack of \_\_\_\_\_ which contains the photosynthetic pigments. The main pigment is \_\_\_\_\_ which absorbs light mainly in the red and \_\_\_\_\_ regions. Other pigments such as chlorophyll b, xanthophyll and \_\_\_\_\_ absorb light from other regions of the spectrum and pass the energy on.

The light \_\_\_\_\_ stage takes place in the granum. Light energy is absorbed by chlorophyll and is used to regenerate \_\_\_\_\_ and split water. This is called the \_\_\_\_\_ of water and results in the release of oxygen, as a by-product, and the release of hydrogen. The hydrogen is picked up by the hydrogen acceptor \_\_\_\_\_ to form  $\text{NADPH}_2$ .

The stroma is the fluid part of the chloroplast which contains the \_\_\_\_\_ which control the carbon fixation reactions. As well as  $\text{CO}_2$ , ATP and \_\_\_\_\_ (from the light stage) are required.

$\text{CO}_2$  is accepted by the 5C compound \_\_\_\_\_ to form an unstable 6C compound. The 6C compound immediately splits into two molecules of a 3C compound called \_\_\_\_\_. ATP and hydrogen produced in the light dependent stage are used to convert GP into another 3C compound (triose phosphate). Two of these 3C compounds double up to form \_\_\_\_\_.

Glucose may then be used to provide energy or it can be stored as \_\_\_\_\_, or used to synthesise \_\_\_\_\_ for cell walls. There are three main \_\_\_\_\_ factors in photosynthesis,  $\text{CO}_2$  concentration, \_\_\_\_\_ and light intensity.

### WORD BANK

chlorophyll a	membranes	ATP	NADP	dependent
blue	photolysis		enzymes	GP
$\text{NADPH}_2$	starch		RuBP	cellulose
Carotene	limiting		temperature	glucose

## Respiration Passage (see word banks opposite)

### AEROBIC RESPIRATION

Respiration is the process by which cells obtain \_\_\_\_\_ in the form of ATP. ATP is used by the cell for processes such as active \_\_\_\_\_, DNA \_\_\_\_\_ and muscle \_\_\_\_\_. The main respiratory substrate used by cells is 6C \_\_\_\_\_. The \_\_\_\_\_ is the site of aerobic respiration.

Glycolysis occurs in the \_\_\_\_\_ and does not require oxygen. 6C glucose is broken down into two 3C \_\_\_\_\_ acid units. The hydrogen that is removed joins with the hydrogen carrier NAD to form \_\_\_\_\_. There is an overall net gain of \_\_\_ ATP in this stage.

The pyruvic acid (3C) enters the mitochondrion where hydrogen is removed to form a 2C molecule called \_\_\_\_\_ CoA. Again, hydrogen joins with NAD to form NADH<sub>2</sub> and the carbon which is removed is released as \_\_\_\_\_.

The Krebs Cycle takes place in the \_\_\_\_\_ of the mitochondrion and is \_\_\_\_\_, therefore requires oxygen. The 2C acetyl CoA joins with a 4C compound to form a 6C compound called \_\_\_\_\_ acid. This acid is gradually converted back to the 4C compound and the cycle is ready to start again.

The final stage is the \_\_\_\_\_ system which occurs on the cristae of the mitochondrion. Most of the energy produced during respiration is made in this stage. The NADH<sub>2</sub> molecules produced during glycolysis and the Krebs cycle transfer \_\_\_\_\_ to the cytochrome system. Oxygen acts as the \_\_\_\_\_ hydrogen acceptor and combines with hydrogen to form \_\_\_\_\_.

### ANAEROBIC RESPIRATION

When anaerobic respiration occurs there is no oxygen to act as the final hydrogen acceptor and so the hydrogen cannot pass through the cytochrome system. As a result, both the Krebs cycle and the cytochrome system cannot occur. The only ATP produced is formed during \_\_\_\_\_. The pyruvic acid produced following glycolysis undergoes a different anaerobic pathway depending on the organism.

In plants: pyruvic acid → 2C \_\_\_\_\_ + CO<sub>2</sub>

In animals: pyruvic acid → (3C) \_\_\_\_\_ acid

Anaerobic respiration produces only 2ATP compared to the \_\_\_ molecules of ATP produced during aerobic respiration.

### WORD BANK

#### AEROBIC RESPIRATION

Transport	contraction	replication	NADH <sub>2</sub>
Energy	water	2	glucose
Pyruvic	acetyl	hydrogen	CO <sub>2</sub>
Matrix	citric	cytoplasm	cytochrome
Final	mitochondrion		

#### ANAEROBIC RESPIRATION

Ethanol	glycolysis	38	lactic
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