Biology paper one (foundation tier)

Knowledge organiser: no answers

Test yourself by answering the knowledge questions from one topic on paper.
Self-assess using the knowledge organiser on the student portal

	Paper:	**B1**
	Topic:	**Types of cells (B.1)**
1	What is the main difference between a prokaryotic and eukaryotic cell?	
2	Give an example of a eukaryotic cell.	
3	Give an example of a prokaryotic cell.	
4	Eukaryotic cells have which sub-cellular structures?	
5	What is the function of cell wall?	
6	What is the function of mitochondria?	
7	What is the function of the nucleus?	
8	What us the function of cell membrane?	
9	What is the function of the vacuole?	
10	What is the function of chloroplasts?	
11	What is the function of cytoplasm?	
12	What is the approximate size of a prokaryotic cell	
13	What is the approximate size of a eukaryote cells	
14	Which is bigger? A prokaryotic or eukaryotic cell?	
15	What is meant by "micro"	
	Topic:	**Specialised cells (B.2)**
1	Define "cell differentiation"	
2	Define "cell division"	
3	Name 3 specialised cells found in the animals and 3 in plants	
4	State the function of a muscle cell	
5	State one adaptation of a muscle cell	
6	State the function of a sperm cell	
7	State three adaptations of a sperm cell	
8	State the function of a nerve cell	
9	State two adaptations of a nerve cell	
10	State the function of a root hair cell	
11	State two adaptations of a root hair cell	
12	State the function of a xylem cell	
13	State two adaptations of a xylem cell	
14	State the function of a phloem cell	
15	State two adaptations of a phloem cell	
	Topic:	**Microscopy (B.3)**
1	How do you calculate the magnification?	
2	Which microscope has the highest magnification?	
3	Which microscope has the lowest resolution?	
4	Which microscope produces 3D images?	
5	Which microscope shows colours?	
6	Which microscope allows to see inside an object?	
7	Which microscope shows black and white images?	
8	Which sub-cellular structures can you see with a higher resolution?	
9	Define "tissue"	
10	Define "organ"	
11	Define "organ system"	
12	Put into order of size (smallest to largest): cell, organism, nucleus, tissue, organ system, organ	
13	What is meant by "centi"?	
14	What is meant by "milli"	
15	What is meant by "nano"	

	Topic:	Cell division (mitosis) (B.4)
1	Put in order of size (smallest to largest): genes, chromosomes, DNA, cell, nucleus	
2	Name the 3 stages of the cell cycle	
3	Describe the three things that happen during interphase	
4	Describe what happens during mitosis	
5	Describe what happens during cytokinesis	
6	State why the cell cycle is important	
7	State what is produced in the cell cycle	
8	Mitosis produces which type of cells?	
9	Define "stem cell"	
10	Name 3 places where stem cells can be found in humans	
11	State two conditions that stem cells can be used to treat in humans	
12	State two uses of stem cells in plants	
13	Describe what is meant by "therapeutic cloning"	
14	Which cells are required for therapeutic cloning?	
15	State two objections to using stem cells in treatment	
	Topic:	**Introducing pathogens and types of disease (B.7)**
1	Define "health"	
2	What is the name for a disease that can be passed on from person to person?	
3	What is the name for a disease that can NOT be passed on from person to person?	
4	State three factors other than disease that can have an impact on health	
5	State one consequence of long term physical ill health	
6	What is the name given to a disease causing microorganism?	
7	Define "risk factors"	
8	State three risk factors for cardiovascular disease	
9	State one risk factor for type 2 diabetes	
10	Name 2 organs effected by drinking alcohol	
11	Name 2 potential impacts of smoking	
12	State a risk factor for cancer	
13	State two lifestyle factors that can impact an unborn baby's development	
14	Why is a sample of people used when investigating risk factors for diseases?	
	Topic:	**Detailed disease case studies (B.8)**
1	Name 4 types of pathogen	
2	Name 3 viral diseases	
3	Name 2 bacterial diseases	
4	Name 1 fungal disease	
5	Name 1 protist disease	
6	State 2 symptoms of measles	
7	State 2 symptoms of HIV	
8	State 1 symptom of TMV	
9	State 2 symptoms of salmonella	
10	State 2 symptoms of gonorrhoea	
11	State 2 symptoms of rose black spot	
12	How is measles spread & prevented?	
13	How is Gonorrhoea spread & prevented?	
14	How is Rose Black Spot spread & prevented?	
15	How is Salmonella spread & prevented?	
	Topic:	**Preventing pathogens from making us unwell (B.9)**
1	State 3 ways that pathogens can be spread	

2	How do bacteria make us feel unwell?	
3	How do viruses make us feel unwell?	
4	Name 4 of the body's non-specific defence systems	
5	How does the skin prevent pathogens from making us unwell?	
6	How does the nose prevent pathogens from making us unwell?	
7	How does the trachea prevent pathogens from making us unwell?	
8	How does the stomach prevent pathogens from making us unwell?	
9	State three ways that white blood cells can help to defend us against pathogens	
10	Which type of white blood cell carries out phagocytosis?	
11	Which type of white blood cell carries out antibody and antitoxin production?	
12	State one thing that can trigger cancers to form	
13	What causes tumours to form?	
14	Define "benign tumour"	
15	Define "malignant tumour"	
	Topic:	**Developing new medicines (B.10)**
1	State three ways that drugs can be produced	
2	Where does the heart drug digitalis originate from?	
3	Where does the pain killer aspirin originate from?	
4	Where does the antibiotic penicillin originate from?	
5	State three things that drugs are tested and trialled for before use	
6	What is used to test drugs during preclinical testing?	
7	Who are medicines tested on in stage 1 of clinical trials?	
8	Who are medicines tested on in stage 2 of clinical trials?	
9	What is a double blind trial?	
10	What is a placebo?	
11	What is the name for the injection given to patients to prevent them from catching an infectious disease?	
12	Describe step 1 of vaccinations	
13	Describe step 2 of vaccinations	
14	Describe step 3 of vaccinations	
15	State two benefits of vaccination	
	Topic:	**Breathing and respiration (B.14)**
1	What is the name of respiration with oxygen?	
2	What is the name of respiration that occurs without oxygen?	
3	What is the word equation for aerobic respiration	
4	What is the balanced symbol equation for aerobic respiration	
5	What is the word equation for anaerobic respiration in animals	
6	What is the balanced symbol equation for anaerobic respiration in animals	
7	What is the word equation for anaerobic respiration in yeast and plant cells	
8	What is anaerobic respiration in yeast cells called?	
9	What happens to your breathing and heart rate when you exercise?	
10	What is the name of the main organ in the respiratory system?	

11	What is the name of the sheet of muscle beneath the lungs?	
12	What is the scientific name for the windpipe?	
13	What is the scientific name for the air sac?	
14	The windpipe divides into two tubes when it reaches the lungs. What are these tubes called?	
15	State three uses of energy in organisms	
	Topic:	**The Heart (B.15)**
1	Which type of vessel leaves the heart?	
2	Which type of vessel enters the heart?	
3	What is the name of the 4 chambers of the heart?	
4	Where is the body's natural pacemaker (cells that control the bodies resting heart rate)?	
5	What is the name of the blood vessel that enters the heart from the body?	
6	What is the name of the blood vessel that enters the heart from the lungs?	
7	What is the name of the blood vessel that goes to the lungs from the heart?	
8	What is the name of the blood vessel that goes from the heart to the rest of your body?	
9	Which side of the heart is thicker?	
10	Which side of the heart pumps oxygenated blood out of it and which side pumps deoxygenated?	
11	What is the name for removing a heart from one person and placing it into another person?	
12	What is the name of the drug that reduces that amount of cholesterol in a person's body?	
13	Which organ does a statin effect?	
14	State 3 adaptations of a red blood cell	
15	State 2 adaptations of a white blood cell	
	Topic:	**The Blood (B.16)**
1	Which type of blood vessel has thin walls but a large lumen?	
2	Which type of blood vessel has thick walls but a small lumen?	
3	Which type of blood vessel has valves?	
4	Which type of blood vessel has a pulse?	
5	Give one non-surgical intervention that can reduce the changes of heart disease/a heart attack	
6	What is the name of the specialised cell that is designed to carry oxygen?	
7	What is the name of the specialised cell that is designed to fight pathogens?	
8	What is the name of the specialised cell that helps to clot our blood?	
9	What is the name of the liquid part of blood that carries dissolved substances?	
10	Give one substance that is carried in the plasma of blood	
11	What is the name of the substance that can block arteries?	
12	What is the name of a disease that occurs when the blood vessels in the muscle of the heart get blocked?	
13	What are the blood vessels that provide the heart with oxygen called?	
14	What is the name of the piece of wire mesh put inside a blood vessel to keep it open?	
15	State the equation to calculate blood flow rate calculations	
	Topic:	**Digestion (B.17)**

1	Which enzyme breaks down lipids, carbohydrates and proteins?	
2	Which enzyme is produced by the salivary glands?	
3	What is the name of the leaf shaped organ that produces enzymes?	
4	What is the name of the organ that produces bile?	
5	What is the name of the organ that stores bile?	
6	Is bile acidic or alkaline?	
7	What is added to the stomach to kills pathogens?	
8	What is the name of the process that breaks down large globules of fat into smaller ones?	
9	Write the word equation for the digestion of carbohydrates	
10	Write the word equation for the digestion of proteins	
11	Write the word equation for the digestion of fats	
12	Which part of the digestive system are nutrients and water absorbed into the blood from?	
13	What is the scientific name for the food pipe?	
14	What is the name of the process where food is pushed down the food pipe?	
15	Name the food group that cannot be digested in the body	
	Topic:	**Transport in cells (diffusion, active transport and osmosis) (B.19)**
1	Substances moving from a high concentration to a low concentration is called…	
2	Two examples of diffusion in humans are:	
3	Three factors that affect the rate of diffusion are:	
4	How are single celled organisms adapted for diffusion?	
5	How is the small intestine adapted for exchanging materials?	
6	How are the lungs adapted for exchanging materials?	
7	How are the gills adapted for exchanging materials?	
8	How are the roots adapted for exchanging materials?	
9	How are the leaves adapted for exchanging materials?	
10	Four ways that to increase the rate of transport	
11	Water moves from a dilute to concentrated solution across a partially permeable membrane via...	
12	Pure water will move into a potato because	
13	(RP) How can you tell the concentration of sugar in a piece of potato?	
14	When a substance moves against the concentration gradient, it is called.	
15	Active transport requires _____ from _____.	energy respiration
	Topic:	**Structure of a plant (B.21)**
1	What is the name of the plant tissue where new cells are made?	
2	What is the name of the specialised plant cell adapted to absorb water & nutrients from the soil?	
3	What is the name of the specialised plant cell adapted to open and close the stomata of a plant?	
4	Which word describes a guard cell (a) filled with water? (b) that has very little water	
5	What is the name of the specialised cell that is adapted to absorb lots of light energy in the leaf?	

6	What is the chemical in chloroplasts that allow plant cells to absorb lots of light energy?	
7	Which type of plant tissue is made up of sieve cells and companion cells?	
8	What is the name for the hole in a leaf that allows gases in and water out?	
9	What is the name of the plant tissue that is made up of a hollow tube of dead cells?	
10	Which tissue in a plant transports water?	
11	Which tissue in a plant transports glucose?	
12	In which plant organ is glucose made?	
13	What is the name for the process that converts water and carbon dioxide into glucose and oxygen?	
14	Which organ of a plant is designed to absorb water?	
15	Which organ of a plant is designed to transport substances from the roots to the leaves and vice versa?	
	Topic:	**Transport in plants (B.23)**
1	Define the term "osmosis"	
2	How do you calculate rate of water uptake by a plant?	
3	How do you calculate percentage change in mass following osmosis?	
4	When looking at an osmosis graph (change in mass of unknown substance vs concentration of known sucrose solution) - how can you identify the concentration of the unknown substance?	
5	Which piece of equipment is used to cut a cylindrical piece of potato?	
6	What is the name given to a semi permeable piece of tubing used to investigate osmosis?	
7	Which substance moves into a plant by osmosis?	
8	How are root hair cells adapted for osmosis?	
9	Define 'active transport'	
10	Name a substance that is moved into plants by active transport	
11	How are root hair cells adapted for active transport?	
12	Define "diffusion"	
13	Name one substance that moves into a leaf by diffusion	
14	Name two substance that moves out of a leaf by diffusion	
15	Which cells open and close to control the diffusion of substances from a leaf?	
	Topic:	**Transpiration and translocation (B.24)**
1	Name the process by which glucose is moved from a leaf to other parts of the cell	
2	What is the scientific name given to the evaporation of water from a leaf?	
3	On which side of the leaf are there more stomata?	
4	What is covering the top layer of the leaf to reduce the loss of water?	
5	Which organ in a plant does water enter through?	
6	Do guard cells become flaccid or turgid when it is very sunny?	
7	Do stomata open or close when it is night time?	
8	Describe the structure of xylem	
9	Describe the structure of phloem	
10	How do you calculate surface area of a cuboid?	
11	State four factors that increases the rate of transpiration	

12	Why does high wind intensity increase transpiration?	
13	Why does high light intensity increase transpiration?	
14	Why does arid conditions increase the rate of transpiration?	
15	Why does high temperature increase the rate of transpiration?	
	Topic:	**Photosynthesis (B.25)**
1	Name the two reactants in photosynthesis	
2	Name the two products formed in photosynthesis	
3	Write the word equation for photosynthesis	
4	Write the symbol equation for photosynthesis	
5	Describe what happens to the rate of photosynthesis as temperature increases	
6	Describe what happens to the rate of photosynthesis as light intensity increases	
7	Describe what happens to the rate of photosynthesis as carbon dioxide increases	
8	Define limiting factor	
9	Name the plant used to investigate the effect of different factors on rate of photosynthesis	
10	How can you calculate the rate of photosynthesis of an aquatic plant?	
11	How can you more accurately calculate the rate of photosynthesis of an aquatic plant?	
12	Which cells are adapted for increased photosynthesis?	
13	How are palisade cells adapted for increased rates of photosynthesis?	
14	State three limiting factors for photosynthesis	
15	In a variegated leaf, why do some parts appear white?	
	Topic:	**The products of photosynthesis (B.26)**
1	State 5 uses of glucose produced during photosynthesis	
2	State two substances required for making proteins in plants	
3	Which substance is used to test for the presence of starch?	
4	What colour will iodine solution turn in the presence of starch?	
5	What colour will iodine solution turn if no starch is present?	
6	Which substance is used to test for the presence of sugar?	
7	What colour will benedict's solution turn in the presence of sugar?	
8	What colour will benedict's solution turn if no glucose is present?	
9	Which substance is used to test for the presence of protein?	
10	What colour will biuret solution turn in the presence of protein?	
11	What colour will biuret solution turn if no protein is present?	
12	Which substance is used to test for the presence of lipids (fats)?	
13	What colour will ethanol solution turn in the presence of fats?	
14	What colour will ethanol solution turn if no fat is present?	
	Topic:	**Exercise and metabolism (B.40)**

1	What is the effect of exercise on heart rate during exercise?	
2	What is the effect of exercise on breathing rate and breathing volume during exercise?	
3	Why does heart rate, breathing rate and breathing volume increase during exercise	
4	Which type of respiration occurs if there is insufficient oxygen available?	
5	State two effects of long periods of anaerobic respiration	
6	How is lactic acid broken down?	
7	Define "oxygen debt"	
8	How would the lung capacity of an athlete compare to a non-athlete	
9	How would the resting heart rate of an athlete compare to a non-athlete?	
10	Define "metabolism"	
11	During metabolism, glucose is converted into which three substances?	
12	During metabolism, lipids are formed from which molecules?	
13	During metabolism, which substances are used to form amino acids?	
14	State two ongoing processes that are part of metabolism	
	Topic:	**RP: Microscopy (B1) (B.41)**
1	What is the aim of the investigation?	
2	What type of microscope is used to view the cells?	
3	What type of tissue is used?	
4	How is the slide prepared?	
5	What do we need to ensure is not present on the slide?	
6	Why is iodine used to prepare the slides?	
7	Which magnification is used to first view the cells?	
8	How do you first find the cells under the microscope?	
9	How do you see the cell sin more detail?	
10	Which sub-cellular structures should you be able to identify?	
11	Which structures cannot be seen with a light microscope?	
12	What type of microscope would you need to use to improve the resolution of the image?	
13	What is the formula to calculate the magnification?	
14	How do you rearrange the formula to find the size of the real object?	
15	How do you convert from mm to µm?	
	Topic:	**RP: Osmosis (B3) (B.43)**
1	What is the independent variable when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato)?	
2	What is the dependent variable when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato)?	
3	Name 5 control variables when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato)	
4	Give 3 ways to make the results accurate when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato)	

5	Name one risk and precaution when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato)	
6	What is the purpose of the distilled water when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato)	
7	How is the concentration inside the tissue estimated when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato)?	
8	How is the percentage change in mass calculated?	
9	What is percentage change calculated rather than just the change when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato?	
10	Why does the tissue increase in mass when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato)?	
11	How can you tell if there has been an increase in mass when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato)?	
12	Why does the tissue decrease in mass when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato)?	
13	How can you tell if there has been a decrease in mass when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato)?	
14	What does no change in mass mean when investigating the effect of sugar concentration on the change in mass of a plant tissue (eg potato)?	
15	What are possible variations on this method?	
	Topic:	
1	How are the food samples prepared for a food test?	
2	What reagent is used to test for starch?	
3	What is the negative result for starch (no starch)?	
4	What is the positive result for starch (starch is present)?	
5	What is the reagent used to test for sugars?	
6	What conditions are needed for Benedict's?	
7	What is the negative result for sugars (no sugars present)?	
8	What is the positive result for sugars (sugars are present)?	
9	What reagent is used to test for lipids?	
10	What must be done to the solution when ethanol is added?	
11	What is a negative result for lipids (no lipids present)?	
12	What is a positive result for lipids (lipids present)?	
13	What reagent is used to test for proteins?	
14	What is a negative result for proteins (no proteins present)?	
15	What is a positive result for proteins (proteins present)?	
	Topic:	**RP: Enzymes (B5) (B.45)**
1	What is the independent variable when investigating the effect of pH on enzymes action?	
2	What is the dependent variable when investigating the effect of pH on enzymes action?	

3	Name 5 control variables when investigating the effect of pH on enzymes action	
4	What piece of equipment is used to place the test solution in when investigating the effect of pH on enzymes action?	
5	How is the temperature controlled when investigating the effect of pH on enzymes action?	
6	Name one risk and precaution when investigating the effect of pH on enzymes action	
7	How do you know when all of the starch is broken down when investigating the effect of pH on enzymes action?	
8	How can accuracy of the measurements be improved when investigating the effect of pH on enzymes action?	
9	Why must the solution be constantly mixed when investigating the effect of pH on enzymes action?	
10	Name one random error when investigating the effect of pH on enzymes action	
11	What has happened to amylase below pH6 and above pH 7?	
12	How can the rate of reaction be calculated when investigating the effect of pH on enzymes action?	
13	How will the results be displayed when investigating the effect of pH on enzymes action?	
14	What results should you see when investigating the effect of pH on enzymes action?	
15	What are possible variations on this method?	
	Topic:	**RP: Photosynthesis (B6) (B.46)**
1	What is the independent variable when investigating the effect of light intensity on photosynthesis?	
2	What is the dependent variable when investigating the effect of light intensity on photosynthesis?	
3	Name 3 control variables when investigating the effect of light intensity on photosynthesis	
4	How is the rate of photosynthesis measured when investigating the effect of light intensity on photosynthesis?	
5	How is the volume of oxygen measured when investigating the effect of light intensity on photosynthesis?	
6	How is the light intensity changed when investigating the effect of light intensity on photosynthesis?	
7	Name one random error when investigating the effect of light intensity on photosynthesis	
8	Give one way to make the results more accurate when investigating the effect of light intensity on photosynthesis	
9	How is the concentration of carbon dioxide controlled when investigating the effect of light intensity on photosynthesis?	
10	Give an alternative way to measure the volume of gas produced when investigating the effect of light intensity on photosynthesis?	
11	Name one risk and precaution when investigating the effect of light intensity on photosynthesis	
12	How is the temperature controlled when investigating the effect of light intensity on photosynthesis?	

13	How is the pondweed controlled when investigating the effect of light intensity on photosynthesis?	
14	What results should you see when investigating the effect of light intensity on photosynthesis?	
15	What other possible factors effecting the rate of photosynthesis could be investigated?	