Name: Form:

SCIENCE FUNDAMENTAL KNOWLEDGE QUIZ BOOKLET

Key Stage 4
Paper 1
Biology

B1 – Cells

What is the function of the cell membrane? Controls what goes in and out	What is the function of the nucleus? Controls the activity of the cell	Where are proteins made in the cell? Ribosomes	Where does respiration happen in the cell? Mitochondria	State 4 similarities between plant and animal cells? - Cytoplasm - Cell membrane - Nucleus - Mitochondria - Ribosomes
State 3 difference between plant and animal cells? Plant cell have - Cell wall - Vacuole - Chloroplast	What is a eukaryotic cell? Give an example - Has a nucleus - Plant and animal cells	What is a prokaryotic cell? Give an example - Has no nucleus - Bacteria or Yeast	State 3 places where Stem cells are found - Embryo - Bone marrow - Meristem	What is this the definition of? 'Movement of water from high to low concentration, through a semi permeable membrane' Osmosis
What is this the definition of? 'Movement of particles from high to low concentration, through a semi permeable membrane' Diffusion	What is this the definition of? 'Movement of particles from a low to a high concentration' Active transport	Name the 3 stages of the cell cycle in order. 1. Interphase 2. Mitosis 3. Cytokinesis	Convert 7mm into µm 7 x 1000 = 7000µm	State 2 advantages of an electron microscope Higher resolution Higher magnification
Which solution has more water 5% or 15% solution? 5%	Which stain is used on an animal cell? Methylene Blue	Which stain is used on a plant cell? Iodine	On a light microscope how do you make the cell appear bigger? Higher power objective lens	On a light microscope how do you make the cell appear less blurry? Adjust fine focus

B2 – Organisation

Which reagent will test for Starch (Carbohydrates)? State the colour change Iodine Orange → Blue black	Which reagent will test for protein? State the colour change Biuret Blue → Purple	Which reagent will test for glucose? State the colour change Benedict's Blue → Orange/Red	Which reagent is used to fats? State the colour change Ethanol + Water Colourless → Cloudy	Which enzyme breaks down Carbohydrates Amylase / Carbohydrase State the products Glucose
Which enzyme breaks down Proteins Protease State the products Amino Acids	Which enzyme breaks down Fats Lipase State the products Fatty Acids + Glycerol	Where is bile made and stored? Made – Liver Stored- Gall bladder	State 2 roles of bile Emulsifies fats Neutralises stomach acid	State 4 components of blood RBC WBC Platelets Plasma
Which blood vessel carries blood away from the heart? Artery	Which blood vessel carries blood back to the heart? Vein	Which blood vessel carries blood to all cells? Capillaries	What is a stent? Opens the blocked artery	What is a statin? Reduces cholesterol
Which layer of a leaf does photosynthesis take place in? Palisade mesophyll	Which layer of the plant does gas exchange take place? Spongy Mesophyll	What is the name given to the movement of water in a plant? Transpiration	What name is given to the movement of glucose in a plant? Translocation	Where does water leave a plant? Stomata

B3 – Infection and response

What is the name given to a microorganism that causes disease Pathogen	Name the 4 pathogens Virus Bacteria Protist Fungi	What do pathogens release that make us feel ill Toxins	Name 3 types of virus TMV HIV Measles	Name 2 types of bacteria Salmonella Gonorrhoea
Name a protist Malaria	Name a type of fungi Rose black spot	What two things do white blood cells release to fight pathogens? Antibodies Antitoxins	Where does a virus replicate? Inside a cell	Which type of pathogen has no cure? Virus
Name 3 primary defence systems of the human body? Skin Stomach acid Hairs in nose	What happens during phagocytosis? WBC engulfs pathogen WBC digests pathogen with enzymes	What is a vaccine? Dead or inactive pathogen	How is a secondary response different to a primary response? Secondary release more antibodies faster	Who is a drug tested on in the 1st phase of a clinical trial? Small group healthy volunteers
What is being looked for in the 1st phase? Side effects	Who is a drug tested on in the 2nd phase of a clinical trial? Small group of unhealthy volunteers	What is being looked for in the 2nd phase? Effectiveness	Who is a drug tested on in the 3rd phase of a clinical trial? Large groups from different backgrounds	What is being looked for in the 3rd phase? Side effects, Effectiveness and dosage

B4 – Bioenergetics

Where does photosynthesis take place? Chloroplast	What is the word equation for Photosynthesis? Carbon Dioxide + Water → Glucose + Oxygen	Sunlight is absorbed in photosynthesis. What type of reaction is this? Endothermic	How does CO_2 enter the plant for photosynthesis? Diffusion through stomata	How does water enter the plant for photosynthesis? Osmosis through roots
Give 4 uses of glucose? Respiration Making cellulose for cell walls Making amino acids Making lipids Storage as starch	Which chemical is used to provide a constant source of CO_2 in the Photosynthesis RP? Sodium Hydrogen Carbonate	How is temperature controlled in the photosynthesis RP? LED lamp	Name 3 factors that effect the rate of photosynthesis? Temperature Light Intensity CO_2 concentration	Where does respiration take place? Mitochondria
What is released in respiration? Energy	Which type of respiration require Oxygen? Aerobic	Which types of respiration require no oxygen? Anaerobic	Write the word equation for aerobic respiration Glucose + Oxygen → Carbon Dioxide + Water	Write the word equation for anaerobic respiration Glucose → Lactic Acid
What is metabolism? Sum of all chemical reactions	**HT Only** Write a balanced symbol equation for Photosynthesis $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$	**HT Only** Write a balanced symbol equation aerobic respiration $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$	**HT Only** At night what is the limiting factor for photosynthesis Light intensity	**HT Only** In winter what is the limiting factor for photosynthesis Temperature