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| Topic | Sub topic | ☹ | 😐 | | ☺ | |
| B1 Cell Structure & Transport | Cell structure – prokaryote, eukaryote, nucleus, cytoplasm, cell membrane, mitochondria, ribosomes, cell wall, vacuole, chloroplasts, plasmid |  |  | |  | |
|  | Microscopy – AIM, light, electron, magnification, resolution, millimetre, micrometre |  |  | |  | |
| RP | Using a light microscope (observing onion cells) |  |  | |  | |
|  | Cell differentiation and specialisation – differentiate, sperm, nerve, muscle, root hair, xylem & phloem |  |  | |  | |
|  | Diffusion – concentration gradient, surface area, temperature |  |  | |  | |
| RP | Investigating the effect of sugar solutions on plant cells (osmosis in potato cylinders) |  |  | |  | |
|  | Exchange surfaces – surface area: volume |  |  | |  | |
|  | Exchanging substances – oxygen, carbon dioxide, urea, alveoli, villi, blood supply, surface area, thin, ventilated, gills, filaments, lamellae, gas exchange, stomata, water vapour |  |  | |  | |
| B2 Cell Division | Chromosomes – nucleus, DNA, gene, characteristics |  |  | |  | |
|  | Mitosis – cell cycle, offspring, grow, replace, copies, daughter cells, clones |  |  | |  | |
|  | Stem cells – undifferentiated, embryos, bone marrow, therapeutic cloning, ethics |  |  | |  | |
| B3 Organisation & The Digestive System | Cell organisation – multicellular, cell, tissue, organ, organ system |  |  | |  | |
|  | Enzymes – catalyst, active site, substrate, specific, optimum, denature, pH, temperature |  |  | |  | |
|  | Enzymes and digestion – mechanical, chemical, carbohydrase, protease, lipase, bile, liver, gall bladder, fatty acids, glycerol, amino acids, simple sugars, emulsify |  |  | |  | |
|  | Food tests – Benedict’s, iodine, biuret, Sudan III |  |  | |  | |
| RP | Investigate the effect of pH on the rate of reaction of amylase enzyme |  |  | |  | |
| RP | Food tests: Test for carbohydrates, lipids, proteins, sugar |  |  | |  | |
| B4 Organising Animals & Plants | The lungs – thorax, alveoli, intercostal muscles, diaphragm, trachea, bronchi, bronchioles, gas exchange, breathing rate, thin walls, surface area, ventilation |  |  | |  | |
|  | Circulatory system –The heart – double circulation, muscle, ventricle, atrium, aorta, vena cava, pulmonary vein, pulmonary artery, valves, coronary arteries, pacemaker |  |  | |  | |
|  | Cardiovascular disease - coronary heart disease, stents, statins, artificial hearts, heart valves, artificial blood |  |  | |  | |
|  | Circulatory system –The blood vessels – artery, vein, capillary, pressure, lumen, muscle, elastic, valves, permeable |  |  | |  | |
|  | Circulatory system –The blood – RBCs, WBCs, plasma, platelets, haemoglobin, oxyhaemoglobin, antibodies, antitoxins, phagocytosis, clot |  |  | |  | |
|  | Helping the heart – stent, cholesterol, plaque, leaky, artificial heart |  |  | |  | |
|  | Plant cell organisation – epidermis, xylem & phloem, palisade mesophyll, spongy mesophyll, meristem, chloroplasts, stomata |  |  | |  | |
|  | Transpiration and translocation – phloem, pores, sap, direction, living, dead, lignin, water, mineral ions, transpiration stream |  |  | |  | |
|  | Transpiration and stomata – light intensity, temperature, air flow, humidity, photometer, guard cells, turgid, flaccid, wilting |  |  | |  | |
| B5 Communicable Disease | Introduction to health and disease – communicable, non- communicable |  |  | |  | |
|  | Communicable disease – pathogen, bacteria, virus, protest, fungi, hyphae, toxins, vector, parasite, direct contact, droplet infection, water, hygiene, isolation, vaccination |  |  | |  | |
|  | Viral diseases – measles, HIV, TMV, |  |  | |  | |
|  | Bacterial diseases and preventing disease – gonorrhoea, Salmonella |  |  | |  | |
|  | Fungal and protist diseases – rose black spot, malaria |  |  | |  | |
|  | Fighting disease – skin, acid, mucus, cilia, immune, phagocytosis, antitoxins, antibodies |  |  | |  | |
| B6 Preventing & Treating Disease | Fighting disease – vaccination – antibodies, immune, risk, epidemic, herd |  |  | |  | |
|  | Fighting disease –drugs – painkillers, antibiotics, resistance, mutate, aspirin, digitalis, penicillin |  |  | |  | |
|  | Developing drugs – testing, efficacy, toxicity, pre-clinical, clinical trial, optimum, placebo, blind, double blind |  |  | |  | |
| B7 Non-communicable Diseases | Risk factors for non-communicable diseases – risk factors, correlation, causal mechanism |  |  | |  | |
|  | Cancer – benign, malignant, risk factors, tumour, radiotherapy, chemotherapy |  |  | |  | |
|  | Smoking – carcinogen, nicotine, carbon monoxide, tar |  |  | |  | |
|  | Alcohol & other carcinogens – foetal alcohol syndrome, cirrhosis, liver, UV, x-ray, radioactive |  |  | |  | |
|  | Diet & exercise – obesity, type 2 diabetes |  |  | |  | |
| B8 Photosynthesis | Photosynthesis – glucose, chloroplasts, chlorophyll, endothermic, |  |  | |  | |
|  | How plants use glucose - cellulose, lipids, starch, amino acids, nitrates, respiration |  |  | |  | |
|  | Rate of photosynthesis – limiting factors |  |  | |  | |
| RP | Investigate the effect of light intensity on the rate of photosynthesis using pondweed |  |  | |  | |
| B10 The Human Nervous System | Homeostasis – control systems, coordination systems, effectors, stimuli, negative feedback, optimum, receptors |  |  | |  | |
| RP | The effect of a factor on reaction times |  |  | |  | |
| B11 Hormonal Coordination | Hormones – blood, target organ, glands, pituitary, pancreas, thyroid, adrenal glands, ovaries, testes |  |  | |  | |
|  | Controlling blood glucose – sugar, pancreas, insulin, diabetes types 1 & 2, treatments, tests |  |  | |  | |
| B12 Reproduction | DNA – nucleus, chromosome, gene, double helix, protein, amino acid, genome |  |  | |  | |
|  | Alleles and genetic diagrams – gene, allele, homozygous, heterozygous, dominant, recessive, genotype, phenotype, genetic cross, Punnett square |  |  | |  | |
|  | Inherited disorders – polydactyly, cystic fibrosis, carriers, embryo screening |  |  | |  | |
| B13 Variation & Evolution | Genetic engineering – vector, plasmid, insulin, enzymes, GM crops, ethics |  |  | |  | |
| B14 Genetics & Evolution | Fossils – minerals, decay, cast, impression, preservation, fossil record, geological activity |  |  | |  | |
|  | Classification – Linnaeus, 3 domains, Woese, binomial nomenclature, evolutionary tree, common ancestor |  |  | |  | |
| B15 Adaptations, Interdependence & Competition | Competition – habitat, population, mate, territory, community, ecosystem, resources, interdependence, stable community |  |  | |  | |
|  | Abiotic and biotic factors – non-living, living, predators, pathogens, pH, food, moisture, light, oxygen |  | |  | |  | |
| RP | Using quadrats & transects |  | |  | |  | |
| B16 Organising An Ecosystem | Food chains – producer, biomass, predator, prey, primary, secondary & tertiary consumers, cyclic fluctuation |  | |  | |  | |
|  | Material cycling – evaporation, precipitation, transpiration, carbon, food chain, photosynthesis, burning, decay, respiration, detritus feeders |  | |  | |  | |
| B18 Biodiversity & Ecosystems | Biodiversity & waste – population, demand, standard of living, waste, water, sewage, land, pollution, acid rain |  | |  | |  | |