CYTOLOGY

- How is the body organised? **Know and explain the levels of body organisation? eg. organs, tissues, cells. Define each.**
- **Define Homeostasis** and know the **key variables** that it controls in the body.
- **Define Positive** and **Negative feedback mechanisms** and give **2 examples** of systems/ processes controlled by each mechanism**.**
- Know **2 differences between animal** and **plant cell**.
- **List** the difference between **Eukaryotic** and **prokaryotic cells**
- **Label the Cell**
- Know **all** the **organelles found in an animal cell** and their **functions**.
- Draw, label & describe the **Cell Membrane / Plasma membrane** and all its structures which make it **selectively permeable** e.g. Trans Membrane Protein
- List **2 main functions** of this membrane.
- List & describe the **6 Types** of **Transport** mechanisms used by cells i.e. Passive - Diffusion, Facilitated diffusion & Osmosis.

  Active- Sodium Potassium Pump. Phagocytosis & Pinocytosis. (Just one sentence on each)

- Know which **types of transport mechanism** are used to transport the following:
  - **Gases** (O_2 & CO_2) & **Water**
  - **Sodium** (ALONG a concentration gradient and AGAINST a conc. gradient)
  - **Potassium** (ALONG a concentration gradient and AGAINST a conc. gradient)
  - **Amino Acids** & **Glucose**

- Know **ALL** the **differences** between **Mitosis** and **Meiosis**.
- Know all the **Epithelial Tissue Types** and **where they are found** (Epithelial Quiz Handout).
- Know the **Connective Tissues Table** ie. ONLY know **type** of connective tissue and **where** it can be found.
- What is a **Synovial Membrane** (What tissues is it made of) and **where it may be found**?
- What is a **Serous Membrane**(What tissues is it made of)? Name **3 places** in the body it is be found.

NOTE: When Studying the different Pathologies, emphasis must be placed on clinical observation, signs and symptoms, red flag symptoms and differential diagnosis of similar conditions.

SKELETAL SYSTEM

- Know **all** the **Anatomical, Physiological & Directional Terminology** e.g. Medial, Proximal, Distal, Caudal, Bilateral, Superficial, deep etc.
- Know the **Planes** of the **body**
- **Define** & **Differentiate** between the different Bone cells (**Osteoblasts** & **Osteoclasts)**
- **Label** the **BONE** & the **SKELETON.**
- Know which **Hormones regulate Bone Growth / Density - both** in **Children** and **Adults.**
- Know **functions** & **effects** of **Parathyroid Hormone** & **Calcitonin** (Compare & know where they are produced, their effect on bone cells & kidneys etc.)
- Discuss the **effect of Exercise** on Bones
- Know **all** the **Types of Bones** (5 Bone Classes) and an **example** of **each**.
- What are the **Fontanelles** and what is their **function**?
- **Define 'Origin** & **Insertion Points'.**
- **Define** & **give an example** of the **4 different Types/ Classes** of **Joints** discussed e.g. Suture, Slightly Movable Joint, Synovial & Planar Joint.
- What is a **Bursae** and what is its **function?**
- **Define / identify** the **Types of Movement / Directional Terms** eg. Abduct vs Adduct, Supine vs Supination, Circumduction, Opposition etc.
- **Define Osteoporosis** and know the **Causes & Risks Factors** (explain why women are at greater risk after the menopause, ie. Protective role of oestrogen etc.) & **Treatment**?
- **Define Osteomalacia / Ricketts** & know the main **Causes** with special reference to the **effect and availability of vit D.**
- **Define Osteomyelitis** and know the **Causes & Symptoms.**
- **Define Hypercalcaemia &** know 3 **Causes and** 5 **Symtptoms**
- **Define** and understand **difference** between **Strain vs. sprain**, ligaments and tendons
- **Define** the different Spinal Deformities e.g. **Kyphosis, Scoliosis, Lordosis**
- **Define Bursitis**
- **Define Osteoarthritis** & **Rheumatoid Arthritis** and **DIFFERENTIATE** the two e.g. Type of Disease/ Aetiology, Epidemiology, Predisposing Factors/ Risks, Symptoms, Affected Tissues/ Joints for each i.e. Study the Comparison Table.
- Define **GOUT &** know and *main* **Cause** & *main* **Symptoms.**
- What is **Ankylosing Spondilitis**?

MUSCULAR SYSTEM

- **Define the following:**
  - Sarcolemma
  - Sarcoplasm
  - Myoglobin
  - Myofibrils
- **Discuss & Compare Muscle Contraction** vs. **Muscle Relaxation (Sliding Filament Theory)** taking special note of the **different minerals used** for each.
- **Differentiate** between the **2 types** of **Skeletal Muscle Fibres i.e. White vs Red Muscle fibres.**
- What **effect** does **Exercise** have on the **Muscle fibres** (i.e. how do they change?)
- **Name the 3 Muscle Types** & **Compare Skeletal Muscle** to **Cardiac Muscle.**
- List **5 factors** which cause Smooth Muscle to contract. I.e. Smooth Muscle contracts in response to……?
- List **2 types of Smooth Muscle** and give **2 examples of where** they are **found**.
- **Define 'Origin & Insertion' Points**.
- **Name** ALL the **MUSCLES** and in particular know their **locations (**where they are found**).**
- Differentiate between a **Muscle Tear** & a **Muscle Strain.**
- **Define Impingement Syndrome.**
- **Define Carpal Tunnel Syndrome** and list its **Causes, Symptoms, Risk Factors** & **Treatments.**
- With regards to the **<u>Muscular Dystrophies</u>** in particular **Duchenne**, **Myotonic Dystrophy & Myasthenia Gravis,** Know the:

  - **Cause**
  - **Pathophysiology / Disease Processes**
  - **Age/ Sex group most affected**
  - **Main Symptoms/ Presentation**

RESPIRATORY SYSTEM

- **Identify** & **LABEL** the **Organs** of **The Respiratory System.**
- List the **main function/s** of the **Larynx** with special reference to the structures found within **e.g.** the **Epiglottis**
- Understand and explain **how** the **Mucocilliary escalator works** and **why** it is **important in immune defence**.
- Explain how the **Alveoli provide defence against Microbes**.
- **Discuss** & **describe** the **mechanism** of **Ventilation** i.e. the process of **Inhalation/ Inspiration** <u>&</u> **Exhalation/ Expiration**.
- **Compare & Contrast Cold** vs **Flu** (ie. Be able to distinguish between the two. e.g. differentiate Causes, Symptoms, Recovery period etc.)
- What are **Nasal Polyps -** Describe the **Pathophysiology** and **list 2 causes**.
- Define **Acute Bronchitis** & **list 3 characteristic symptoms.**

- Define **Asthma** and **differentiate** between **Atopic & Intrinsic Asthma** (i.e. **compare Causes** & **Symptoms)**
- List **5 Common Triggers** for **Asthma**
- What is the **Medical treatment** for **Asthma** (especially for an acute attack)
- Define **Chronic Obstructive Pulmonary Disease** (COPD)
- List **3 causes** and **3 symptoms** of **Obstructive Sleep Apnoea.**

CARDIOVASCULAR

- List **4 Functions** of **blood**
- Name the **3 types of Plasma Proteins**.
- Define **Serum**
- **Define Haemolysis**. Name the organ associated with this process?
- **Define Haematopoiesis** & **Erythropoiesis,** which **hormone** is **involved in** erythropoeisis and **where** is this hormone **produced?**
- Learn '**Blood Grouping'** Table- know which blood groups can donate to each other, compatability & incompatability.
- Know and understand **Rhesus Factor**. Be able to explain it.
- List the **4 stages** of **Haemostasis**.
- Know **which <u>Vitamin</u>** is **needed for Haemostasis** and **which medications are contraindicated with this Vitamin**.
- Explain **how gallbladder problems can lead to a deficiency of this vitamin**. (*<u>Start</u> by explaining that this vitamin is Fat/ lipid soluble and go from there.)*
- With regards to ALL the **<u>Anaemia's</u>** (Study the Summary Table) :
    - Know **Causes**
    - Distinguishing **Symptoms** (with special reference to the difference between **Iron deficiency** vs **Megaloblastic (Pernicious** Anaemia).
    - What **Tests** would be carried out and what would they **Show**? **Differentiate** between **Arteries** & **Veins**, **Capillaries** & **Sinusoids.**
- With regards to **<u>Leukaemia</u>**
    - Define- Know what **effect** it has **on the different blood cells**?
    - Know the **Symptoms** and be able to **EXPLAIN** how the change in the different blood cells produces the different Symptoms.
- Know **4 differences** between **Arteries** & **Veins**

- Label the **Heart** incl**.** Chambers, Valves, Blood Vessels, Coronary Vessels, Interventricular septum etc.

- Discuss the **Conduction System** of the **heart** using the following terms: ***Sinoatrial Node, Atria, Atrioventricular Node, Relay Station, Atrioventricular Bundle (Bundle of His) Interventricular Septum, Right & Left Bundle Branches, Apex of the heart, Purkinje Fibres, Ventricles.***
- Define **Tachycardia** & **Bradycardia**
- List **3 Factors** affecting/ controlling **Venous Return**
- Discuss and differentiate between the **2 main types** of **Lipoproteins**
- List the different types of **Shock**.
    - Identify the **main Symptoms** of **shock** (Clinical presentation).
    - Discuss the **Action Required.**
- List **10 Causes/ Risk Factors** for the development of **Atheroma**
- List **3 Complications** of **Atheroma**. (What is the difference between **Embolism** &. **Thrombus**?)
- **Define** & know the **symptomatic differences** between **Angina Pectoris** & **Myocardial Infarction** (Heart Attack).
- With regards to **STROKE**:
    - List 3 common signs of **Stroke**.
    - What is **TIA**? How may it **present**?
- Define **Aneurysm**
- With regards to **DVT** (Deep Vein Thrombosis):
    - **Define**- Know the Cause
    - Know **Signs & Symptoms**
    - List **Predisposing Factors**
    - Know **Complications**
    - Know **Recommendations** / **Treatment**
- What is a **Varicose Vein**? How will it present (**Sxs**?)
- With regards to **Raynaud's Syndrome**:
    - Know the **Cause**
    - **Characteristic presentation (Sxs)**
    - **Triggers**
- Define **Oedema** & **Ascites**
- List **5 Complications** of severe/ chronic **Hypertension** e.g. Aneurysm, Atheroma, Stroke, Renal disease, retinal Bleeding etc.
- Know the **Symptoms** of **Right** & **Left sided Heart Failure.**
- Know the **distinguishing & differentiating symptoms** of **Endocarditis & Pericarditis**

DIGESTION

- What is the **Peritoneum** and what is its **function**?
  Define Peritonitis
- What is the **Greater Omentum**?
- What is the **Myenteric (Auerbach's) Plexus**? **What does it control**?
- Define '**Peristalsis**'
- What is the **Submucosal Plexus**? **What does it control**?
- How does **Autonomic Nervous System control the digestive system**? What are the **effects** of **stress** or **rest** on this system and digestion?
- Name the **3 types** of **Salivary Glands**
- What is the **composition** & **function** of **Saliva?**
- With regards to **Carbohydrates:**
  - What is a **Monosaccharide?**
  - Give **2 examples** of **Monosaccharide, Disaccharides** and **Polysaccharides.**
- What are **Enzymes?**
- List **5 RED FLAG Symptoms** when investigating the **digestive system/ pathologies.**
- With regards to **<u>Oral Thrush / Candidiasis</u>:**
  - Know the **Symptoms, Cause, Differential diagnosis, Complications** and **Treatment.**

- With regards to **<u>Tonsillitis</u>:**
  - Know the **Symptoms, Cause, Complications** and **Treatment.**

- Define **Hiatus Hernia**

- With regards to **<u>Peptic Reflux Oesophagitis</u> (GORD):**
  - Know the **Symptoms, Differential diagnosis, Causes & Trigger foods.**

- List **6 components** of **Gastric Juice** and give **one function** for **each**. E.g **Pepsinogen** = precursor to **Pepsin** and pepsin is an **enzyme that breaks down protein**

- With regards to **<u>Chronic Gastritis</u>:**
  - **Define** & give 3 main **Causes** & 2 **Symptoms**.
  - Explain how **Chronic Gastritis** may lead to **Anaemia especially Megaloblastic Anaemia**

*(The Parietal Cells in the stomach produce/ manufacture Intrinsic Factor which is intrinsic ie. essential for vit. B12 absorption!. Chronic gastritis or gastritis caused by pernicious anaemia (autoimmune destruction of Intrinsic Factor) can result in reduced **intrinsic factor production** and thus malabsorption of B12. Vitamin B12 is needed for the proper maturation of RBC's. Deficiency of vit B12can lead to immature/ non-maturation or formation of functional RBCs and thus Megaloblastic anaemia)*

- With regards to **Peptic Ulceration:**
    - **Define** & give 3 main **Causes**
    - Know 2 **Symptoms -give special attention to the foods/ drinks** that **may exacerbate** the **symptoms**. (List 6 aggravating foods/ drinks)
    - Know Allopathic **Treatment**
    - List 2 **complications**

- What is the **Brush Border** and **where** is the **'Brush Border' located?** *(Villi & Micro Villi of the Small intestine)*
- List all the **Brush Border Enzymes** and know what they **work on (Break down)** and what the **end products are.**
- Define **GALT & MALT**- what is its **function**?
- What is the **main function** of **Cholecystokinin?**
- What makes the **Pancreas** such a **unique Glandular Organ**? (*It has both Endocrine & Exocrine Functions*)
- Know the **enzymes secreted** by the **Exocrine Pancreas** to digest **Proteins, Carbohydrates** & **Fats** respectively**.**
- Understand why the Pancreas secretes the **inactive** forms of **Trypsin & Chymotrypsin**.
- Know **the main functions** of the **Liver, Bile** and **Gallbladder**.
- Study the Table of **Digestion in the small intestine**- Know all the **Enzymes** used to break down **Carbs, Proteins** and **Fats** and know **what they are broken down into.**
- What is the **name** given to the **longitudinal ribbons of smooth muscle** on the **outside** of the **colon** that cause it to have a **sacculated / puckered appearance?**
- Know ALL the **Signs & Symptoms** of **Appendicitis**
- What may be indicated when the **pain in appendicitis suddenly subsides** without treatment and **then re-appears as peritonitis**.
- **Define IBD** and **differentiate** between **Crohn's Disease & Ulcerative Colitis** i.e. Learn the **Comparison Table** in handouts.
- With regards to **IBS** (**Irritable Bowel Syndrome**):
    - Know the **Symptoms, Causes** & Common **Treatment**
    - List **4 indications / Signs** that would **differentiate IBD from IBS**. I.e. Know the symptoms that would point to IBD instead of IBS
- With regards to **Coeliac Disease:**
    - **Define**

- Discuss the **Cause** & **Pathophysiology** (Which part of the intestines is affected and what happens to the Brush border etc.)
- Know the **Symptoms**
- What is the **treatment**?
- Which **foods** need to be **avoided** and why?

- Define **Diverticulosis** and know **3 Causes.**
- Define **Liver Cirrhosis** and give **3 causes** and **3 consequences.**
- With regards to **<u>Cholelithiasis</u>:**
  - **Define**
  - Give **3 characteristic Symptoms- presentation**
  - **Explain how** this could **lead to Jaundice.** *(The common bile duct is obstructed, so excretion of bile is obstructed. Bile contains conjugated bilirubin- Bilirubin is a waste product from the breakdown of red blood cells. so bile is the main excretion route for bilirubin. When bilirubin can't be excreted it builds up in the blood stream causing jaundice.)*

ENDOCRINE

- What is a **Hormone?**
- Explain why it's recommended to **take growth** and **repair nutrients at night?** (*Highest production of Growth Hormone occurs at night and GH is responsible for promoting growth and division of cells as well as releasing Insulin Growth Factor*)
- Study the **<u>Pituitary Hormone Table</u>** (In Handouts) (PLEASE **USE FULL WORDS/ NAMES,** NOT ABREVEATIONS FOR THE HORMONES) Know**:**
  - **Place of production** (Anterior Pituitary)
  - **Target Tissue/s or Organs**
  - **1** main **Function / Role / Effect**
- Know the **2 Hormones** secreted by the **Posterior Pituitary**, their **Target tissues** / **Organs** & **Main functions**.
- Identify/ differentiate between **<u>GIGANTISM</u>** & **<u>ACROMEGALY</u>** .i.e.
  - List **CAUSES & SYMPTOMS** for each
  - Discuss the **Pathophysiology** for each
  - Explain **why** the two **present differently.**
- **Diabetes Insipidus** is associated with a deficiency of which hormone? What are the main **symptoms**?
- Name the **hormones** produced by the **Thyroid Gland**
- With regards to these Hormones**:**
  - List **3 effects/ Functions**

- What **hormone stimulates their release/ production**?
- Which **minerals** are essential for **healthy functioning of this gland**?

- What is a **Goitre? When** may it occur?
- What do **elevated TSH** levels indicate?
- List **3 things** that **stimulate Thyroid Hormone production**.
- Give **2 other names** for **HypErthyroidism**
- Differentiate between the **Signs** & **Symptoms** of **Hyperthyroidism** & **Hypothyroidism**
- List and explain **4** main **symptoms** of **Hyperparathyroidism** e.g. **Osteoporosis**
- Learn the **Flow Chart Summarising** the **Adrenal Glands & Hormones i.e.**

  (The Handout called Adrenal Summary- Worksheet).

  Alternatively, answer the following:
  - What are the **main functions** of the **Glucocorticoids?**
  - What are the **effects** of **high quantities** of **Glucocorticoids?**
  - Give an example of a **primary Mineral Corticoid** and **where** is this hormone **produced?**
  - **Where** are **Adrenaline & Noradrenaline produced** and **give 4 functions/ Effects.**
- With regards to **ADDISON'S Disease** & **CUSHING'S Syndrome**
  - **Which hormones** are **affected** in each condition and in **what way?**
  - **Differentiate** between **Causes** of both.
  - **Differentiate Sgs** & **Sxs** (Max 8 for each).
  - Know **Complication/ Danger** if these conditions are left **untreated.**
  - Know Allopathic **Treatment** of both.

- Which **pancreatic cells** produce **Insulin**? Which **pancreatic cells** produce **Glucagon**? **Compare** effects of **Insulin** & **Glucagon.**

- With regards to **Diabetes Mellitus:**
  - What is the **cause?**
  - Name the **4 kinds**
  - List **6 Signs & Symptoms**
  - What is the **Treatment**?
  - List **5 complications** of Chronic Diabetes

- What are **Ketones** & when are they **produced**?

- Where is **Melatonin** produced and give 1 **main function.**
- Where is **Thymosin** produced and give 1 **main function.**
- Learn the **Table** of **'Local Hormones'**

SKIN

- Name the **muscle connecting the hair follicle to the dermis,** responsible for creating '**Goose Flesh'.**
- List the main **functions** of **skin**
- Define **HypOthermia** & **HypERthermia**
- **Which vitamin precursor** is **activated** in the **skin**?
- Define the following terms**: Lichenification, Keloid & Comedones**
- Know **ALL** the **Clinical Features** of **Eczema/ Dermatitis**
- With regards to **ATOPIC Dermatitis/ Eczema:**
  - Explain **'Atopic Disposition'**
  - Know **how** will it **present** in a **Blood Test**?
  - Know the **Cause**
  - Know the **Symptoms- especially** where it **typically first presents**
  - Know the **Complications.**
  - **Investigations.**
  - **Treatment (Allopathic AND Complementary.)**

- With regards to **Psoriasis:**
  - Know the **Cause.**
  - Know the **Symptoms.**
  - **Triggers**
  - Know the **Complications.**
  - **Treatment (Allopathic & Complementary).**

- With regards to **Acne Vulgaris:**
  - Know **what is affected** (ie. Lesions affect Hair follicles & Sebaceous Glands)
  - Know the **Clinical Features.**
  - **Causes**
  - **Treatment (Allopathic).**

- With regards to **Acne Rosacea:**
  - Know the **classical presentation** and **characteristic symptoms.**
  - List **5 possible causes.**
  - List **4 factors** which may **aggravate** it
  - List **5 Suggested Complementary Treatment modalities**

- With regards to **<u>Verrucae</u>:**
  - Know the **Cause.**
  - Know the **Symptoms.**
  - Know the **Complications.**
  - **Treatment (Allopathic & Complementary).**

- What is **Vitiligo** and **how does it present**?
- List 4 **Complications** of **Burns**.

LYMPHATIC SYSTEM

- What is **Lymph**?
- Know 1 **Main Function** for the:
  - **Lymph Nodes** *(**Filtering**- removing foreign matter e.g. microbes etc.)*
  - **Spleen** *(**Phagocytosis, Store Blood, Immunity**- Maturation of T & B-Lymphocytes)*
  - **Thymus** *(**Produces Thymosin**, promoting **T-Lymphocyte maturation**)*
  - **Red Bone Marrow** ***(Produces Lymphocytes)***
  - **Lacteals** ***(Absorption** of **Fats** & **fat- soluble vitamins)***

- List the 3 **main functions** of the **Lymphatic System**
- **MALT – Define** and name **4 places/ locations in the body** you would **find it**.
- With regards to **<u>Lymphangitis</u>:**
  - What is it? - **Define**
  - What **causes** this**?**
  - What **complication** may occur?
  - How is this condition **treated**?

- With regards to **<u>Lymphoedema:</u>**
  - **Define**
  - Know the **Primary & Secondary Causes.**

- Define **<u>Lymphadenitis</u>** and know its **Cause**

- Define **<u>Splenomegaly</u>** & give **Causes**