**Energy -**

How does energy move through an ecosystem?

Trace the path of food through the organs of the digestive system and explain what happens to the food in each organ.

**Cellular respiration** –

What is the purpose of cellular respiration?

What do you start with and what do you end with?

What is the significance of **ATP**?

How is energy released?

How many net ATP gained per glucose?

How are breathing and cellular respiration related?

**Fermentation** –

What is it?

Is oxygen required?

**Alcoholic** – Products? Examples?

**Lactic acid** – Products? Examples?

**Photosynthesis** –

What is the purpose?

What do you start with and what do you end with?

How is it related to cellular respiration?

**Cells -**

Can you describe the difference between an animal cell and a plant cell?

Can you describe the difference between a prokaryotic cell and an eukaryotic cell?

Describe the location (plant or animal cell) and function of the following organelles: nucleus, cell wall, cell membrane, mitochondrion, chloroplast, ribosome, smooth endoplasmic reticulum, rough endoplasmic reticulum, golgi body, lysosome,

Describe what passive transport is in relation to the cell membrane.

Describe what active transport is in relation to the cell membrane.

Explain what diffusion is.

Explain what osmosis is.

**MITOSIS/MEIOSIS REVIEW** -

What is the differences between asexual and sexual reproduction?

Which one (mitosis or meiosis) is important to cell division?

**Cell cycle** -

**Interphase** –What occurs during interphase?

**Mitotic (M) phase** – what occurs during this phase?

**Mitosis** – What occurs during each stage? (**prophase, metaphase, anaphase, telophase**)

**Terms -** Centrosomes, spindle microtubules, chromatin, chromosome, sister chromatids, centromere

**Cancer –** How are **cancer** cells different from normal cells?

Difference between **benign** and **malignant tumors**?

**Meiosis** –

What is the significance?

Where does it occur?

What occurs in each phase of meiosis I and meiosis II?

How does meiosis contribute to genetic variation?

**Terms -** Homologous chromosomes, gametes, diploid, haploid, fertilization, tetrads, crossing over

What are the main differences between mitosis and meiosis?

What is the difference between end results of mitosis and meiosis?

**GENETICS REVIEW** -

**Terms -** alleles, dominant, recessive, phenotype, genotype, homozygous, heterozygous, Sex-linked traits

## DNA/ PROTEIN SYNTHESIS –

**DNA** –

What is the significance?

What are the 3 parts of **nucleotide**?

What are the 4 bases and which are **complementary** to each other?

Which is the “backbone’ and which are the “Rungs’?

**DNA replication** –

Why is it necessary?

What is the process?

If you are given a sequence of parent DNA, can you give the sequence of replicated strands?

**Protein synthesis** –

What determines genotype and

phenotype?

What are the similarities and differences between **RNA** and DNA?

What is the significance of RNA?

**Transcription** –

What is the significance?

Where does it occur?

What is the process?

What is **mRNA**?

What are the similarities and differences between DNA replication and transcription?

Given a sequence of DNA strand, can you give the mRNA strand sequence?

**Translation** –

What is the significance?

Where does it occur?

What is the process?

What does **genetic code** tell us?

What is **start codon** and **stop codons**?

Do you know how to use the genetic codon table?

What is **tRNA** and its parts?

How does tRNA work with mRNA?

**Anticodons**? **Ribosomes**?

Given a sequence of DNA or mRNA strand, can you give a tRNA sequence and/or amino acids that are coded for using a condon table?

What is the significance of proteins?

How are genes, DNA, and proteins related?

**Mutations –**

What are they?

What causes them?

What are **base substitutions** and base **deletions or insertions**?

What is the usual outcome of each?

Which usually causes much more drastic changes and why?