**Cellular Respiration**

1. **What metabolic pathway is common to both fermentation and cellular respiration of a glucose molecule?**
2. **For each mole of glucose (C6H12O6) oxidized by cellular respiration, how many moles of CO2 are released? How many ATP?**
3. **Most CO2 is released during which catabolic reaction?**
4. **What is the final electron acceptor of the electron transport chain that functions in aerobic oxidative phosphorylation?**
5. **What are the products of glycolysis?**
6. **What is the product of pyruvate oxidation?**
7. **Be able to read the diagram to answer questions.**



**DNA & RNA, Protein Synthesis**

1. **What is the central dogma of biology and what are the processes involved?**
2. **What are Chargaff’s two rules?**

1. **Scientists did experiments to determine if DNA or protein was the genetic material.**

**Explain what the scientists discovered and their experiments.**

 **Griffith**

 **Hershey and Chase**

1. **Define Antiparallel.**
2. **Define Transcription.**
3. **Define Translation.**
4. **Use the diagram to answer the following question.**



**Referring to the figure, what bases will be added to the primer as DNA replication proceeds?**

1. **Semiconservative replication requires a template. What is the template?**
2. **The genetic code is reduntant. What does that mean?**
3. **What is the function of the enzyme topoisomerase in DNA replication?**

**Cell Cycle**

1. **Describe the major events that occur in each phase of the *somatic* cell cycle. Specifically include what form/position the genetic material is in and various structures (centrioles, nucleus, mitotic spindles).**

**Interphase-**

 **G1-**

 **S-**

**G2-**

 **Mitosis-**

 **Prophase-**

 **Prometaphase-**

 **Metaphase-**

 **Anaphase-**

**Telophase/Cytokinesis-**

1. **Describe differences of cell division in animal and plant cells.**
2. **A pig’s somatic cell has 38 chromosomes. How many chromosomes did the pig inherit from each parent? How many are in its gametes? How many are in its somatic cell after S phase?**
3. **Complete the following table of chromosome number in various species.**

|  |  |  |
| --- | --- | --- |
| **Species** | **# of chromosomes in diploid cells (2n)** | **# of chromosomes in haploid cells (n)** |
| **Fruit fly** |  | **n=4** |
| **House fly** | **2n = 12** |  |
| **Rice** |  | **n = 12** |
| **Petunia**  | **2n = 14** |  |

1. **Define genome.**
2. **Define karyotype.**
3. **Describe the major events that occur in each phase of the *gamete* cell cycle. Specifically include what form/position the genetic material is in and various structures (centrioles, nucleus, mitotic spindles**).

**Interphase-**

 **G1-**

 **S-**

**G2-**

 **Meiosis-**

 **Meiosis I**

 **Prophase I -**

 **Metaphase I -**

 **Anaphase I -**

**Telophase I/Cytokinesis I –**

 **Meiosis II**

 **Prophase II**

 **Metaphase II**

 **Anaphase II**

 **Telophase II/Cytokinesis II -**

**Genetics**

1. **Explain the difference between monohybrid and dihybrid crosses.**
2. **Know how to work a Monohybrid cross, a Dihybrid cross, codominance and incomplete dominance, ABO blood groups, pedigree, X-linked traits**
3. **Why are males more often affected by sex-linked traits than females?**
4. **Generally, only female cats have the tortoiseshell phenotype for fur color. Explain this phenomenon?**
5. **Between what two genes would you expect the highest frequency of recombination.**



**Evolution**

1. **Define adaptations**
2. **Define artificial selection**
3. **Fossils**
4. **Be able to read phylogenetic trees.**

**Classification**

1. **Which scientist developed the naming system we use today that assigns a genus and species name?**
2. **A domestic dog is also known as *Canis familiaris.***

**What is this organism’s genus? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**What is this organism’s species? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**What is it’s scientific name? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **What are the seven levels of biological hierarchy in correct order, beginning with Kingdom.**
2. **Be able to read a cladogram and identify derived characters for individual organisms.**
3. **Multicellular, eukaryotic organisms that are plant-like in structure but must obtain food by absorbing nutrients from the environment belong to which kingdom?**

**Ecology**

1. **Levels of biological hierarchy – organismal, population, community, ecosystem, landscape, global**
2. **Identify the trophic levels of a food web – autotrophs, heterotrophs, primary consumer, secondary consumer, tertiary consumer**
3. **Identify the growth curve for carrying capacity and exponential growth.**
4. **Describe and give examples of the interactions among organisms – predation, commensalism, mutualism, parasitism.**