1. Biology *Multiple Choice*- Which of these is not a function of proteins on a cell’s plasma membrane?

**W.** To provide a hydrophilic channel across the membrane

**X.** To act as a receptor for ligands

**Y.** To provide more surface area for the cell

**Z.** To serve as an identification tag for the cell

**Answer:** Y

1. Biology *Short Answer*- By name or number, denote all of the following that is incorrect about NaDH.
2. NaDH can be broken up to produce 3 ATP
3. NaDH produces 1 ATP if produced in the cytoplasm
4. 2 NaDH are produced in glycolysis, which accounts for the 4 ATP produced in that step
5. 8 NaDH are produced in Krebs cycle

**Answer:** 2 and 4

1. Biology *Short Answer*- What is the name of the tissue region that is located between the atria and ventricles of the heart, is part of the electrical control system of the heart, and controls its heart rate?

**Answer:** Atrioventricular node (also accept: AV node)

1. Biology *Short Answer*- Which phylum of organisms contain sponges?

**Answer:** Porifera

1. Biology *Short Answer*- What is the name of a protein that functions in properly folding and assembling other proteins?

**Answer:** Chaperonins (also accept: chaperone proteins)

1. Biology *Multiple Choice*- Which of the following is not true about chaperonins?

**W.** The chaperonin molecule is composed of a cap and a hollow cylinder

**X.** The hollow cylinder changes its structure and shape when the cap attaches

**Y.** The protein being assembled folds spontaneously

**Z.** The inside of the chaperonin provides a hydrophobic surrounding to assist in the protein’s folding

**Answer:** Z

1. Biology *Short Answer*- What is the name of the plant hormone with the chemical formula C2H4 that promotes fruit ripening and regulates growth?

**Answer:** Ethylene

1. Biology *Multiple Choice*- Which of the following is not true about G protein-coupled receptors?

**W.** A ligand binds to a G protein-coupled receptor, which binds to a G protein

**X.** G protein-coupled receptors are made up of seven α helices

**Y.** G protein-coupled receptors can trigger many different signal transduction pathways

**Z.** Around half the drugs currently marketed target G protein-coupled receptors

**Answer:** Y

1. Biology *Multiple Choice*- How is C4 photosynthesis different from C3 photosynthesis?

**W.** In C4 plants, chlorophyll P680 is more efficient than it is in C3 plants

**X.** C4 plants can photosynthesize better in lower levels of light than can C3 plants

**Y.** C4 plants are more efficient CO2 fixers than are C3 plants

**Z.** C4 plants require more water for photosynthesis than do C3 plants

**Answer:** Y

1. Biology *Short Answer*- During the regeneration phase how many glyceraldehyde 3-phosphate (PGAL) are converted into six ribulose biphosphates?

**Answer:** 10

1. Biology *Short Answer-* Which of the steps of cellular respiration occurs in the cytosol?

**Answer:** Glycolysis

1. Biology *Multiple Choice*-The movement of urine through the urinary tract can be described as which of the following?

**W.** Osmosis

**X.** Active transport

**Y.** Bulk flow

**Z.** Facilitated flow

**Answer:** Y

1. Biology *Multiple Choice*- In which of the following is meiosis I different from meiosis II?

**W.** They have different number of chromosomes in the parent cell before division begins

**X.** There is crossing over at prophase in meiosis II

**Y.** There are 46 chromatids in meiosis I

**Z.** In meiosis II the chromosomes are arranged in homologous pair

**Answer:** Y

1. Biology *Multiple Choice*- Which of the following is the name of the type of mimicry by which a harmful insect mimics a noxious insect for protection from a common predator?

**W.** Batesian mimicry

**X.** Mullerian mimicry

**Y.** Aggressive mimicry

**Z.** Monarchial mimicry

**Answer:** X

1. Biology *Short Answer*-In CAM photosynthesis, oxaloacetate is converted into what compound which is stored in the vacuole?

**Answer:** Malic acid

1. Biology *Multiple Choice*- Which of the following provides the nourishment for a seed through the polymer starch?

**W.** Zygote

**X.** Nectar

**Y.** Pollen tube

**Z.** Endosperm

**Answer:** Z

1. Biology *Short Answer*- What is the name of the acid that is found in bee and ant stings?

**Answer:** Formic acid (also accept: methanoic acid)

1. Biology *Short Answer*- Which chemical compound do birds use to get rid of excess nitrogen in the body?

**Answer:** Uric acid

1. Biology *Multiple Choice*- Which of the following is not an example of a secondary compound?

**W.** Nicotine

**X.** Caffeine

**Y.** Nutmeg

**Z.** Abscisic acid

**Answer:** Z

1. Biology *Multiple Choice*- Which of the following best describes the behavior of a graylag goose when it returns an imaginary egg back to its nest after an egg had rolled out and been removed?

**W.** Instinct

**X.** Imprinting

**Y.** Fixed action patterns

**Z.** Habituation

**Answer:** Y

1. Biology *Multiple Choice*- Which of the following is an example of habituation?

**W.** A chimpanzee will stack boxes to provide access to bananas out of reach

**X.** Wasps are able to return to their nests by associating markers such as pinecones with their nest

**Y.** A male stickleback fish attacks a cube with a red underside

**Z.** Sea anemones will ignore nonfood items after several attempts to capture it

**Answer:** Z

1. Biology *Short Answer*- By name or number, denote all of the following statements that are incorrect.
2. Gonadotropin releasing hormone (GnRH) stimulates the anterior pituary gland
3. Follicle stimulating hormone (FSH) are secreted by follicles
4. Estrogen stimulates the thickening the endometrium
5. Testosterone stimulates the production of androgens in the testis

**Answer:** 2 and 4

1. Biology *Multiple Choice*- Which of the following is not a extraembryonic membrane?

**W.** Yolk sac

**X.** Chorion

**Y.** Allantois

**Z.** Embryonic disc

**Answer:** Z

1. Biology *Multiple Choice*- Which of the following is a monocot?

**W.** Fern

**X.** Pine tree

**Y.** Corn plant

**Z.** Pea plant

**Answer:** Y

1. Biology *Multiple Choice*- Which of the following does not occur in both the roots and stem?

**W.** Primary phloem

**X.** Primary xylem

**Y.** Vascular cambium

**Z.** Casparian strips

**Answer:** Z