1. In a blind study, only a third outside party knows which group receives the treatment and   
   which receives the placebo.  
   a. True  
   b. False  
   Correct answer: b. False  
   2. An Anion is a type of Ion with a negative charge  
   a. True  
   b. False  
   Correct: a. True  
   3. What are the Four Primary Types of Ionizing Radiation?  
   a. Gamma Rays, X-Rays, Microwaves, Alpha Particles  
   b. X-Ray, Gamma Rays, Alpha Particles, Beta Particles  
   c. Beta Particles, Alpha Particles, UV rays, X-Rays  
   d. Alpha Particles, Beta Particles, Gamma Rays, UV rays  
   Correct: b  
   4. Amino acids contain a carboxyl group, amino group and hydrogen on the same carbon.  
   a. True  
   b. False  
   Correct: a. True  
   5. Isotopes vary in the number of  
   a. Protons  
   b. Electrons  
   c. Neutrons  
   d. Bonds  
   Correct: c. Neutrons  
   6. Under which system is the skin apart of?  
   a. Integumentary  
   b. Digestive  
   c. Urinary  
   d. Respitory  
   Correct: a

1-What is a lipid and protein barrier called?

 Ans: Cell membrane

 Nervous system

 Tissue

2-True/False. Cell is biggest unit of life.

Ans: False

3-What are the most abundant biomolecule?

 Amino acids

 Ans: Carbohydrates

 Glucose

4-True/False. Bond-making is an exothermic process.

Ans: True

5-which of the following is in NOT a characteristic of hydrogen bond?

• Strong polarity

• Attracts to self

• Surface tension

• Ans: Share a pair of electrons

1.) The natural adaptation of physiological processes to a given set of environmental conditions

is known as

a.) Acclimation

b.) Accretion

c.) Acceptation

d.) Acclimatization

Answer: d.) Acclimatization.

N.B: Acclimation occurs artificially such as in a laboratory.

2.) When oxygen concentration in a tissue decreases, which type of control occurs?

a.) Local control

b.) Response loop

c.) Reflex control

d.) Long distance control

Answer: a.) Local control.

Local control is restricted to the tissue or cell involved. In this type of control, a relatively

isolated change occurs in a tissue. On the other hand, in reflex control, cells at a distant site

control the response.

3.) How does the body output in order to maintain mass balance?

a.) Excretion

b.) Conversion through metabolism

c.) Digestion

d.) Both A and B

Answer: d.) Both A and B

While either A or B is correct, the best answer is d.) Both A and B since these are the two main

options.

4.) Anticipatory responses (i.e., reflexes that enable the body to predict that a change is about to

occur and start the response loop in anticipation of the change) are called negative feedback

loops.

True or False?

Answer: False.

These responses are actually called feedforward control.

5.) An everyday example of clearance is “garlic breath.”

True or False?

Answer: True.

Clearance is the process by which substances disappears from the blood. Volatile lipid-soluble

garlic compounds in the blood pass into the airways and are exhaled.

6.) In the hypothesis: Cold temperatures cause birds to increase their food intake. Food intake is

the independent variable.

True or False?

Answer: False.

Food intake is actually the dependent variable since it depends on the temperature. Temperature

is independent variable.

1. What can occur when loss of homeostasis is not compensated?

a. Illness

b. Death

c. Homeostasis is reestablished

d. ‘a.’ and ‘b.’

Correct Answer: d.

2. Why does radioactive decay occur?

a. An isotope lacks a stable neutron to proton ratio

b. An element can be inherently radioactive

c. The element has a negative charge

d. The element has a positive charge

Correct Answer: a.

3. When is oxygen toxic?

a. At high temperatures

b. Never

c. At high partial pressures and when reduced

d. At low partial pressures and when oxidized

Correct Answer: c.

True/False:

1. Correlation equals causation

Correct Answer: False

2. An alpha particle is essentially helium

Correct Answer: True

3. Saturated Fats contain lots of double bonds

Correct Answer: False

Which of the following are some characteristics of Pseudoscience?

 Unfalsifiable

 Relies heavily on Anecdotes

 Uses Technobabble

 Unchanging

 Professes Certainty

 All of the above.

Answer: All of the above

How many types of ionizing Radiation are there?

 One

 Two

 Three

 Four

Answer: Four

What is a highly reactive nonmetallic element with strong oxidizing agent and has the second-

highest electronegativity of all reactive elements can be toxic?

 Hydrogen

 Carbon dioxide

 Oxygen

Answer: Oxygen

TRUE/FALSE

The four primary types of ionizing radiation are: alpha, beta, neutrons, protons.

True or False?

Answer: False

They are alpha, beta, gamma (or photons) and neutrons

2.) Double-blinded crossover studies are not formats of experimental design.

True or False?

Answer: False

They are formats of experimental design.

3.) Biorhythms are regulated variables that change predictably and create repeating patterns or

cycles of change.

True or False?

Answer: True.

Multiple Choice Questions

1. Which of the following is not a type of ionizing radiation?

a. Alpha particles

b. Gamma rays

c. Neutrons

d. None of the above

Answer: d

2. What is a prospective study?

a. A study that collects data about an individual’s past.

b. A study that collects future data about the participants.

c. A detailed study of an individual over a long period of time.

d. None of the above.

Answer: b.

3. Which of the following is not a step in cellular respiration?

a. Electron transport chain

b. Glycolysis

c. DNA replication

d. Kreb’s Cycle

Answer: c.

Katrina Jabech

6242931

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Questions For Test 1

True/False Question

1. To survive, one must consume carbohydrates.

Answer: False

2. Emergent properties are properties that are greater than the sum of the individual components.

Answer: True

3. Function explains “how” a physiological process occurs.

Answer: False

1) Which of the following is not true about homeostasis?

a. To maintain homeostasis, the body must maintain mass balance

b. Ability of body to maintain constant internal environment

c. Maintained by negative and positive feedback control mechanism

d. If body fails to maintain homeostasis, then normal function is disrupted and disease

state may result

Correct answer c.

2) Which of the following is false regarding free radicals?

a. Antioxidants can absorb extra electron, therefore stopping chain of free radical

formation

b. Unstable molecule with an unpaired electron

c. Can contribute to aging and development of diseases such as some cancer

d. Free radicals do not occur naturally in the body

Correct answer d.

3) What is the function of glycogen in the body?

a. Long-term energy storage in the body

b. Stored form of glucose that is a ready source of energy

c. Helps body absorb vital nutrients in the kidney

d. Primary substrate for ATP production

Correct answer b.

4) True or False. Carbohydrates are primarily carbon, hydrogen, and oxygen, in the ratio CH2O.

True

5) True of False. Humans receive an estimated radiation of 320-360 mr/year.

True

6) True of False. Genetics plays the biggest role in chronic disease.

False

Multiple choice   
1. What is an application of conservation of mass to the analysis of physical systems? By   
accounting for material entering and leaving a system, mass flows can be identified which   
might have been unknown, or difficult to measure without this technique.   
ANSWER: MASS BALANCE   
2. Physiology includes what in the levels of organization and the related fields of study?   
ANSWER: MOLECULES, CELLS, TISSUES, ORGANS, ORGAN SYSTEMS, ORGANISMS,   
AND POPULATION OF ONE SPECIES

1. What is essentially a hydrophobic permeability barrier consisting of phospholipids,   
   glycolipids, and membrane proteins?   
   ANSWER: MEMBRANE   
   True or false   
   1. Electrons have the same mass as protons. ANSWER: FALSE   
   2. Ionizing radiation is produced by unstable atoms. ANSWER: TRUE   
   3. Alpha particles travel short distance, have large mass and is only a hazard when inhaled.   
   ANSWER: TRUE

1) What kind of study was the Framingham Heart Study?

a) Retrospective study

b) Cross sectional study

c) longitudinal study

d) prospective study

e) longitudinal and prospective study

ans) e because the study involved taking a group of people, planning to gather their data, then

gathering data from those people over a long period of time. This question was based on page

23 in the textbook.

2) Bruce walked by a poorly managed lab that had its door open. On the table, about 40 feet

away from him, was an open container labeled radioactive alpha particles. Upon seeing this,

Bruce ran away from the lab and went straight to his lawyer’s office to write up a will because he

thought that he had just been exposed to a fatal dose of radiation. Was he justified in his

response and why?

a) Yes because alpha particles are small, can travel a long distance, and cause massive

damage.

b) No because alpha particles are large an only travel a short distance so he was safe

because he was 40 feet away

c) Yes because any kind of radioactive radiation is always fatal from any distance

d) No because alpha particles are completely harmless from any distance

e) No but he will soon turn green and gain incredible strength when he gets angry

ans) b, alpha particles can cause damage to a person only if they come into very close contact

like ingesting the particles. This question was based on slide 12 in the Radiation PowerPoint.

3) Tony was taking a shower when he noticed a lump on his back. He went to a doctor who said

it was a malignant tumor. The doctor told him to get treatment that involved low linear energy

transfer radiation. After the treatment, tests showed that there was minimal, if any, shrinkage of

that tumor. What could be an explanation for this?

a) The tumor was high in sulfur which mitigates the effects of radiation.

b) The tumor has high levels of oxygen

c) The tumor was low in oxygen.

d) Low linear energy transfer radiation only emits beta particles and only treats benign

tumors

e) The doctor was crazy because radiation should never be used to treat cancer

ans) c because if the tumor was low in oxygen, the reactive oxygen species free radicals that

are caused by the low linear energy transfer radiation did not have anything to react with and

could not cause damage to the tumor. This question was based on slide 19 in the Radiation

PowerPoint

4) Tom and a group of other people have chronic migraine and entered into a clinical study

testing the efficacy of a new drug that is designed to reduce the amount of monthly migraine

days. The people were split into 2 groups and Tom was in the first group. His group was given

the inert substance called a placebo but they were not told that. They were, however, warned

that they may experience muscle soreness. Over half of them reported muscle soreness. They

experienced the placebo effect.

a) True

b) False

Ans: False because the placebo effect is when the patient feels like the symptoms are reduced

even though they are given an inert substance. The nocebo effect is when a patient is given an

inert substance but warned they may have side effects. They report those side effects. This is

what they experienced in the above question. This question was based on page 22 in the

textbook.

5) Radioactive elements are composed of unstable atoms that must take neutrons and electrons

from other atoms in order to stabilize themselves.

a) True

b) False

ans) False, radioactive elements are composed of unstable atoms that must give away mass

and or energy in order to stabilize themselves. This question was based on slide 23 in the

Radiation PowerPoint

1. True or False:

Homeostasis is the tendency towards a relatively unstable equilibrium between

interdependent elements, internal environment as your blood pressure.

Answer: False- Homeostasis is the tendency towards a relatively stable equilibrium

between interdependent elements, internal environment as your blood pressure

2. True or False:

Physiology defined as the study of the normal functioning of a living organism.

Answer: True.

3. True or False: Cells that are rapidly dividing are more affected by radiation in comparison

to cells that are not.

Answer: True.

1. How much effect genetics have on humans?

a. 10%

b. 20%

c. 30%

d. 40%

e. 50%

Answer: c. 30%

2. Human have about\_\_\_ genes

a. 210,000

b. 21,000

c. 2100

d. 210

e. 21

Answer: b. 21,000

3. Which X-ray is typically used for cancer?

a. Superficial X-ray

b. Diagnostic X-ray

c. Supervoltage X-ray

d. Megavoltage X-ray

e. Orthovoltage X-ray

Answer: d. Megavoltage X-ray

1- Proteins are one of the primary constituents of living matter. They consist of long chains

of amino acids, which are bonded together by peptide linkages and are thus called

polypeptides. From the list below select those elements that can be found in proteins.

1. Carbon

2. Hydrogen

3. Oxygen

4. Nitrogen

5. Sulfur

6. All of the above

7. None of above

Answer: 6. All of the above

2- Glycolysis breaks down glucose into two three-carbon compounds and generates energy.

This process occurs in the:

1. The cytoplasm of the cell

2. Outside of the cell

3. Mitochondria

4. Nucleus

5. Golgi Apparatus

6. All of the above

7. None of above

Answer: 1) The cytoplasm of the cell

3- Hydrogen Bonding consists of interaction involving a hydrogen atom located between a

pair of other atoms having a high affinity for electrons. Based on this we can say that:

1. They are the third type of van der Waals' forces

2. If they are present, substances show a high melting and boiling points

3. They are responsible for keeping together the two strands of DNA

4. They are responsible for the formation of the secondary structure of a protein

5. Surface tension in water is possible because of hydrogen bonding.

6. Hydrogen in the hydrogen bond is the final electron acceptor in human respiration

Answer: 1,2,3,4, and 5

4- In cellular respiration, oxygen is the final electron acceptor

True

5- Gamma radiation is the most dangerous type of radiation known to man, it can pass

through a person's body and damage the cell in their path, especially those that divide

rapidly.

True

6- Codons are a sequence of three consecutive nucleotides in a DNA or RNA molecule that

codes for a specific amino acid, this means that the same amino acid can’t be coded from

different codons.

False

Multiple Choice

1. The atomic mass of an element is equal to

a. Electrons + protons

b. Protons + neutrons

c. Electrons + neutrons

i. B is correct

2. Unstable atoms differ from stable atoms because they have \_\_\_\_\_

a. Excess of energy

b. Excess of mass

c. Neither A or B

d. Both A and B

i. D is correct

3. In chemical reactions bond breaking is a/an \_\_\_\_\_\_ process

a. Endothermic

b. Exothermic

c. Physical

d. None of the above

i. A is correct

True/False

1. The four primary types of ionizing radiations are alpha particles, beta particles, x rays

and gamma rays (True)

2. Alpha rays are less damaging than x rays (False)

3. Essential amino acids are those that you must receive in your diet (True)

Multiple Choice Questions:

1. What is the utility of homeostasis?

a) To use chemical signals, electrical signals, or combination of both to make cells

communicate.

b) The ability to keep the internal environment relatively stable.

c) To protect the cells from the external environment.

d) To maintain water and solutes in the internal environment.

Answer: b) The ability to keep the internal environment relatively stable.

2. Which of the following is NOT a factor manipiulated by the investigator?

a) Experimental and Control groups.

b) Control variable.

c) Dependent variable.

d) Independent variable.

Answer: c) Dependent variable.

3. What is the function of a Cross-sectional study?

a) To analize data from a population at the present moment.

b) To look at a group of people over an extended period of time.

c) To use existing data that have been recorded for other reasons than research.

d) To use existing data from previous research to derive conclusions about the current

research.

Answer: a) To analize data from a population at the present moment.

True or False Questions:

1. The function of the endocrine system is to defend against foreign invaders, which include

the thymus, the spleen and the lymph nodes.

Answer: False. The endocrine system coordinate the body functions through synthesis and

release regulatory molecules, which include the thyroid and adrenal glands.

2. In a double blind study, neither the subjects or the researchers know which group is the

experimental group and which is the control.

Answer: True.

3. In negative feedback the response reinforces the stimulus rather than decrcreasing or

removing it.

Answer: False. In a negative feedback, the response oppose or removes the original stimulus.