1) Grazing animals such as horses and cows are:
   a) Producers
   b) Primary consumers
   c) Secondary consumers
   d) Tertiary consumers
   e) Quaternary consumers

2) An organism feeding at multiple trophic levels is called a/an:
   a) Decomposer
   b) Detritivore
   c) Omnivore
   d) Quaternary consumer
   e) Herbivore

3) How much chemical energy (stored as biomass) is available to secondary consumers from 10,000 kcal of primary productivity?
   a) 10,000 kcal
   b) 1000 kcal
   c) 100 kcal
   d) 10 kcal
   e) 1 kcal

4) The Gulf Stream and Japan currents both move clockwise from a southerly point of origin in the northern hemisphere. What is the most direct result of these currents?
   a) Warming at northern latitudes
   b) Cooling at northern latitudes
   c) Stabilization at all latitudes
   d) Warming at southern latitudes
   e) Cooling at southern latitudes

5) The Humbolt current might most directly be associated with:
   a) Cooling western South America
   b) Warming Western Australia
   c) Cooling Eastern Africa
   d) Warming the British Isles
   e) Cooling Eastern South America

6) Ascending (rising) moist air in the tropics:
   a) Releases moisture into the tropics
   b) Results in an area of calm called the “doldrums”
   c) Drives the trade winds
   d) Descends as dry air over the tropics
   e) More than one answer is correct

7) Seasons are a direct result of:
   a) The permanent orientation of the globe relative to the sun
   b) The permanent tilt of the planet as it orbits the sun
   c) The orientation of the nine planets of solar system
   d) The angle of the sun relative to the equator
   e) Global warming

8) According to lecture, of the following abiotic factors, which has the most significant impact on producers?
   a) Disturbance
   b) Sunlight
   c) Temperature
   d) Wind
   e) Rocks

9) Which of the following might be the main diet for a secondary consumer?
   a) Wheat and corn plants
   b) Herbivorous insects and plants
   c) Decomposing animal matter
   d) Seed eating birds
   e) Carnivorous plants

10) How might temperature influence an aquatic biosystem?
    a) Reduce available oxygen
    b) Increase the rate of evaporation
    c) Increase the metabolism of phytoplankton
    d) Decrease competition for light
    e) More than one answer is correct

11) Which of the following is/are true of cellular respiration?
    a) Cellular respiration occurs continuously in Eukaryotic organisms
    b) The process of cellular respiration converts CO2 and H2O to C3P sugar molecules
    c) Cellular respiration ultimately harvests the energy contained in glucose molecules
    d) A and b above are correct
    e) A and c above are correct

12) The “waste” products of cellular respiration are:
    a) Carbon dioxide and water
    b) Glucose and oxygen
    c) ATP and glucose
    d) A phosphate group and water
    e) ADP and ATP
13) The principle known as Conservation of Energy states that:
   a) Energy is either created or destroyed
   b) Energy can neither be created nor destroyed
   c) 25% use of alternative energy sources must be achieved by 2013
   d) Kinetic energy is the product of motion
   e) Energy is defined as the capacity to perform work

14) Which of the following is/are true of cellular respiration?
   a) Cells use oxygen to help harvest the energy potential of organic food molecules
   b) Heat generated from cellular metabolism accounts for about 60% of the energy released
   c) Heat generated from fuel consumption in cells is used to keep a constant body temperature
   d) This process breaks organic fuel into smaller waste molecules with less chemical energy than the original fuel molecule.
   e) More than one of the above is correct

15) An aerobic process (such as cellular respiration...):
   a) Requires oxygen
   b) Requires nitrogen
   c) Requires carbon dioxide
   d) Requires light
   e) Requires water

16) The food you eat provides a source of phosphates for the production of ATP by which process below?
   a) The transfer of electrons from one substance to another
   b) The harvesting of chemical energy
   c) The recycling of nitrogen groups
   d) The breakdown of organic fuels
   e) More than one answer is correct

17) Which statement is not correct?
   a) Cellular respiration is a series of reactions
   b) The metabolic pathway for cellular respiration includes Glycolysis, the Krebs Cycle, and electron transport
   c) Cellular respiration is responsible for the conversion of energy used to do cellular work
   d) Cellular respiration requires the intake of complex carbohydrates
   e) Cellular respiration occurs within the membranes of mitochondria

18) Which metabolic stage of cellular respiration does not require oxygen?
   a) Glycolysis
   b) The Calvin cycle
   c) The Krebs cycle
   d) The light reaction
   e) Electron transport

19) Energy is made directly available for cellular work when:
   a) ATP gains a phosphate group
   b) ATP loses a phosphate group
   c) ATP is energized by light
   d) ATP is released by fatty acids
   e) ADP is energized by light

20) Of the foods humans consumes, which group can be used as fuel for cellular respiration?
   a) The macronutrients; Fat, carbohydrates, and protein
   b) The micronutrients; zinc, calcium, and phosphorus
   c) Sugar, starch, and iodine
   d) Only carbohydrates
   e) Only simple sugars