

### PRACTICE EXAM ANSWER KEY

1. **B** phosphorus does not cycle through the atmosphere
2. **E** 10% of the total biomass is transferred to the next level, however the question asks for percent reduction of biomass which would be 90%.
3. **A** energy releases heat as it does work.
4. **D** this question asks you to calculate the amount of light produced by a light bulb. You know the amount of energy going into the bulb (1.00 joules) and its efficiency (3%). So 3% of 1.00 is 0.03, and the useful energy produced is light not heat.
5. **D** the only answer choice that describes waste of energy is leaving the lights on.
6. **A** the correct formula for this problem is  $4,500 \text{ tons} \times (2,000\text{lb}/ 1 \text{ ton}) \times (5,000 \text{ BTU/lb}) = 4.5 \times 10^{10}$ .
7. **E** WATTS X TIME = Watt hours. 1,000 watts = 1 kwh, so  $500/1,000 = 0.5 \text{ kWh}$
8. **C** is the only false statement. The total energy of a system will always remain the same and not be converted to matter.
9. **C** algal blooms are stimulated by excessive run off of fertilizer causes oxygen depletion and dead zones in the water.
10. **C** the NPP is the amount of energy that plants pass on to the community of herbivores in the ecosystem.
11. **E**, only evaporation requires solar energy.
12. **C** provides the correct definition for atoms.
13. **A** there is a little saying that might help you remember which form of nitrogen plants can use “the plants ATE the nitrate.”
14. **B** Transpiration is the loss of water to air, from plants.
15. **D** producers in deep sea hydrothermal vents use chemosynthesis instead of photosynthesis.
16. **A** refers to pumping CO<sub>2</sub> into the atmosphere instead of somewhere for long term storage.
17. **C** cellular respiration is when glucose and oxygen are converted to carbon dioxide, water, and energy,
18. **A** 2 weeks = 14 days  
100% = 0 days  
1/2 = 2 days  
1/4 = 4 days  
1/8 = 6 days  
1/16 = 8 days  
1/32 = 10 days  
1/64 = 12 days  
1/128 = 14 days
19. **E** Gross primary productivity = NPP + respiration,  $7,000 \text{ kcal/m}^2/\text{yr} + 15,000 \text{ kcal/m}^2/\text{yr} = 22,0000 \text{ kcal/m}^2/\text{yr}$