

Concepts of Science **NAME** _____
Exam 2 February 19, 1993 **Class Time** _____ **Lab Sec.** _____

When Solving Problems, be sure to show all work

1. Briefly define or explain the significance of the following terms. (30%)

a. Molecule

b. Exothermic Reaction

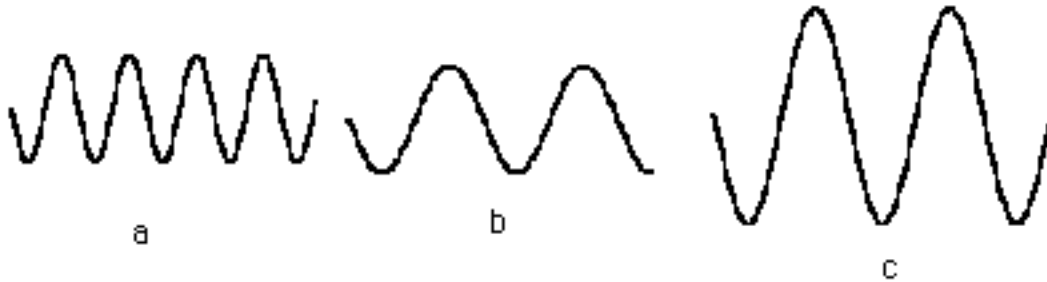
c. Messenger RNA

d. Fossil fuel

e. Micell

g. Genetic code

2. Assuming that the 3 waves are on the same scale, which is higher in energy? Briefly defend your answer. (10%)



3. We have seen that cellular energy is largely derived from glucose as shown below. If the heat of combustion of glucose is 683 kcal/mol, how much energy (in kcal) will result from converting 120 grams of glucose to CO₂ and H₂O? (10%)



b. How many grams of carbon dioxide (CO₂) will be produced when the conversion above is carried out? (10%)

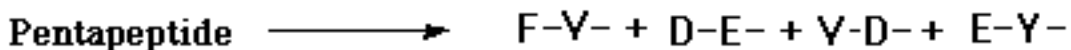
4. We have learned that enzymes are proteins which function as catalysts for biological reactions.

a. Briefly explain what a catalyst is. (5%)

b. What is the general structure of a protein? (5%)

c. Explain the main way in which proteins function as catalysts. (a simple diagram with a few labels is the best way to answer this. 5%)

d. Deduce the sequence of a pentapeptide which is hydrolysed to the dipeptides below. (5%)



5. Circle the objects below which are chiral. Briefly explain how you arrived at your answer (10%)



6. What is the kinetic energy of a 60 kg woman who is running at 5 meter/sec? (10%)