Revision for SAC

Name _____

1) Explain the following using the terms, covalent bonds, dispersion forces, ionic bonds, hydrogen bonds, amino acids.
    a) Primary structure

    b) Secondary structure

    c) Tertiary structure

    d) Quaternary structure

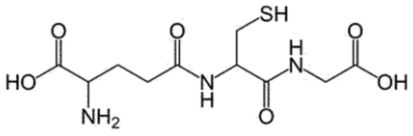
4 marks

2) With reference to the tertiary structure of a protein, explain the reason why:
    - when enzymes are subjected to heat or changes in pH, they fail to catalyse reactions.

    - each enzymes acts as a biological catalysts for specific chemical reactions

2 marks

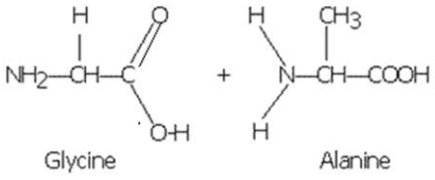
3) A small peptide chain is shown on the right



    a) How many amino acids were used ?
    b) Circle the amide link/s
    c) Is this peptide heavier, lighter or the same mass as the total mass of the amino acids that formed it?
    d) By how many mass units?
    e) Give the structure of each amino acid present and identify it as an alpha or beta amino acid.

1+1+1+1+3 = 7 marks

4) Consider the amino acids glycine and alanine.



    a) How many possible dipeptides can be formed?
    b) What type of reaction is this? Explain
    c) Draw the structural formula of the product of this reaction.
    d) What is the molecular formula of glycine?
    e) Draw the structure of glycine at pH 4
    f) Explain why alanine and cytosine are used as pH buffers ?

1+1+1+1+1+1=6 marks

5) The following compounds form a mixture. C_2H_6, C_5H_{12}, $C_5H_{12}O_2$. They can be separated by fractional distillation.

a) Explain how fractional distillation works.

b) Place the molecules above in order of boiling point from lowest to highest.

Lowest_____highest

6) Fermentation occurs in yeast due to anaerobic respiration to produce ethanol.

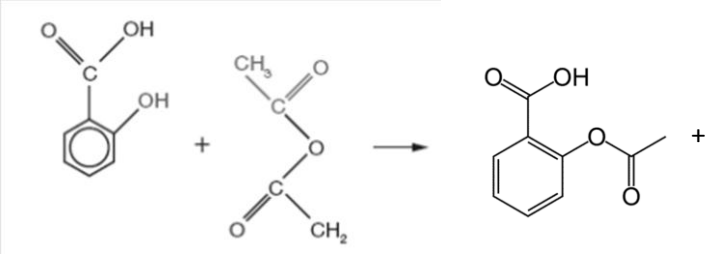
a) Write an equation for this reaction as glucose ($C_6H_{12}O_6$) is converted to ethanol.

b) Photosynthesis produces glucose and oxygen gas from atmospheric carbon dioxide and water. Write a balanced chemical equation for this reaction.

c) Why is ethanol considered to be a carbon neutral fuel?

1+1+1=3marks

7) The structure of aspirin is shown on the right while the reactants shown on the left.



a) What two words can be used to describe the reaction above?

b) What is the second product formed?

1+1=2marks

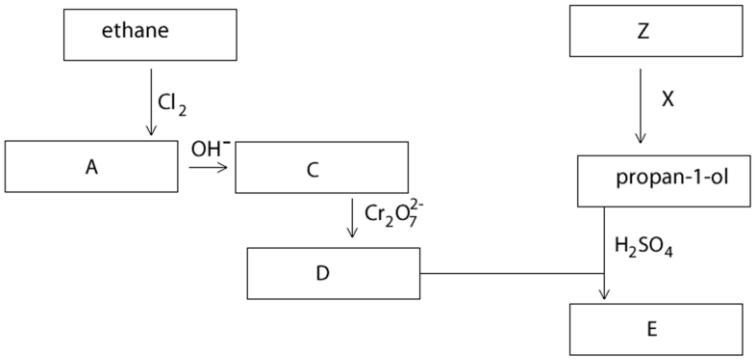
8) Draw the structures of the following compounds.

i) 2,2 dibromo pentane

ii) 2,3-dichloro, 4-ethyl hexane

iii) Propyl ethanoate

1+1+1=3marks



9) Name each of the following

A _____

Z _____

D _____

E _____

X _____

C _____

1+1+1+1+1+1=6marks

10) Draw and name the possible isomers for butan-1-ol

5 marks