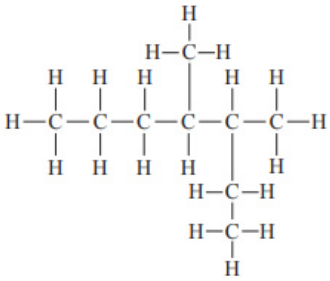
Organic (2016 VCE)



Solution will appear here

1) What is the correct systematic name for the compound shown above? A. 4-methyl-5-ethylhexane
B. 2-ethyl-3-methylhexane
C. 4,5-dimethylheptane
D. 3,4-dimethylheptane

Solution

2) Met-enkephalin (Tyr–Gly–Gly–Phe–Met) is a peptide found in the central nervous system and the gastrointestinal tract of the human body. Which of the following are the correct structures for the two terminal ends of met-enkephalin at a very low pH?

A.	$-NH_2$	–COOH
B.	$-NH_2$	$-COO^-$
C.	$-NH_3^+$	$-COO^-$
D.	$-NH_3^+$	–COOH

Solution will appear here

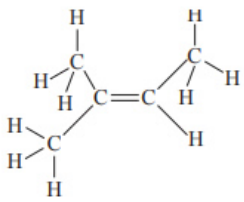
Solution

3) A condensation reaction involving 200 glucose molecules, $C_6H_{12}O_6$, results in a polysaccharide. The molar mass, in g mol^{-1}, of the polysaccharide is
A. 36 000
B. 35982
C. 32 418
D. 32 400

Solution will appear here

Solution

4) The molecule with the structural formula shown below reacts with hydrogen bromide, HBr, to form $C_5H_{11}Br$.



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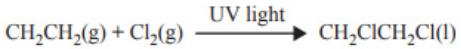
The number of different structural isomers theoretically possible to be produced by this reaction is
A. 1
B. 2

C. 3
D. 4

Solution

5) When ethene is mixed with chlorine in the presence of UV light, the following reaction takes place.



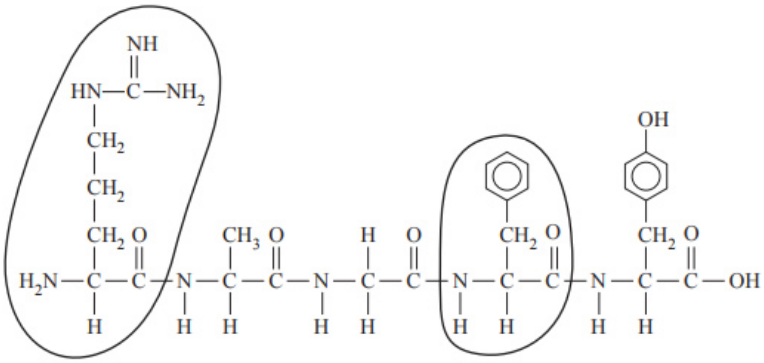
Reactions of organic compounds can be classified in a number of ways. The following list shows four possible classifications:
1. addition
2. substitution
3. redox
4. condensation

Which classification(s) applies to the reaction between ethene and chlorine?
A. 1
B. 1 and 2
C. 1 and 3
D. 4

Solution

Solution will appear here

6) Substance P is a peptide found in the human body, and it is associated with inflammation and pain. The structure of Substance P is shown below.



What are the abbreviated names of the two circled amino acid residues? A. Arg and Phe
B. Lys and Tyr
C. Phe and Tyr
D. Met and Arg

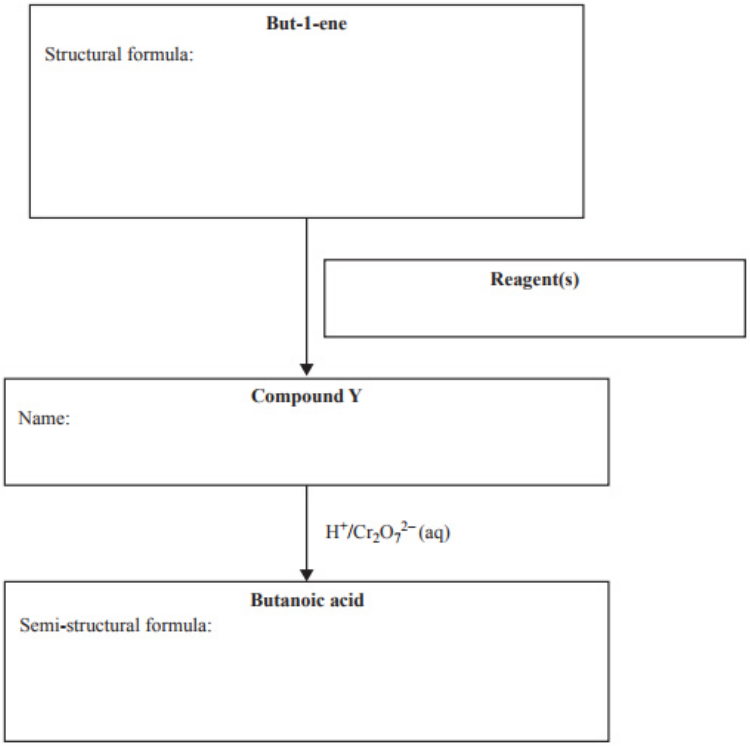
Solution

Solution will appear here

7) Butanoic acid is the simplest carboxylic acid that is also classified as a fatty acid. Butanoic acid may be synthesised as outlined in the following

Solution will appear here

reaction flow chart.



i. Draw the structural formula of but-1-ene in the box provided.

Solution

ii. State the reagent(s) needed to convert but-1-ene to Compound Y in the box provided.

Solution

iii. Write the systematic name of Compound Y in the box provided.

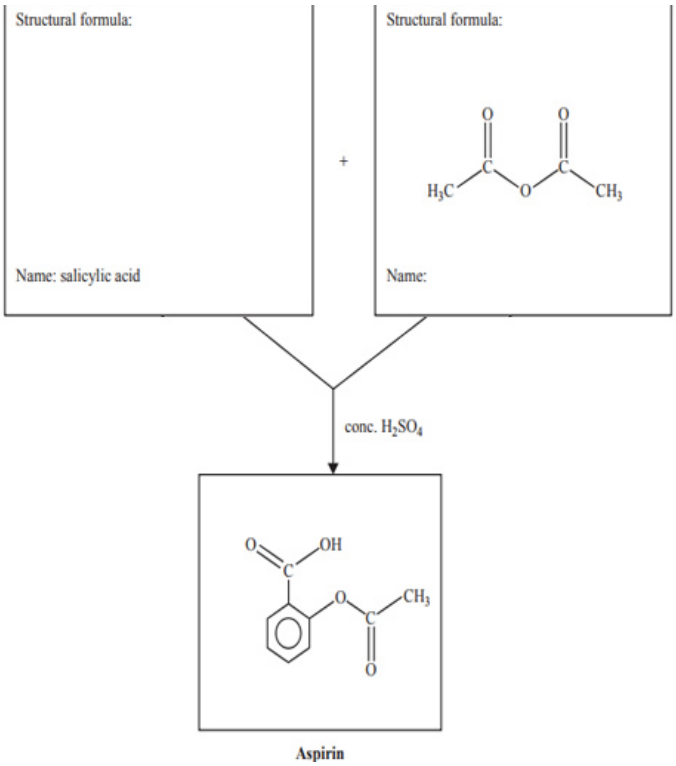
Solution

iv. Write the semi-structural formula of butanoic acid in the box provided.

Solution

v. Write a balanced half-equation for the conversion of $Cr_2O_7^{2-}$ to Cr^{3+}.

Solution



Solution will appear here

8) An incomplete reaction pathway for the synthesis of aspirin is given above.
i. Draw the structural formula of salicylic acid in the box provided.

Solution

ii. The structural formula of the other reactant is provided. State its systematic name in the box provided

Solution

9) $NH_2CH_2CH_2NH_2$ forms a condensation polymer with butanedioic acid, $HOOCCH_2CH_2COOH$. Draw the structure of the repeating unit on the copolymer that would be formed.

Solution will appear here

Solution