

Organic (2017 VCE)

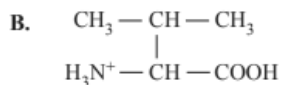
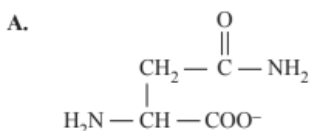
1) Which of the following contains a chiral carbon?

	Name	Semi-structural formula
A.	2-methylbut-1-ene	$\text{CH}_2\text{C}(\text{CH}_3)\text{CH}_2\text{CH}_3$
B.	2-chlorobutane	$\text{CH}_3\text{CHClCH}_2\text{CH}_3$
C.	propanoic acid	$\text{CH}_3\text{CH}_2\text{COOH}$
D.	1,2-dichloroethene	ClCHCHCl

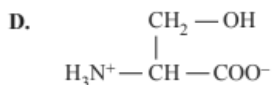
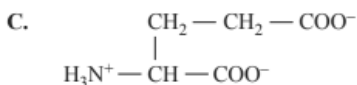
Solution will appear here

Solution

2) Which one of the following structures represents a zwitterion of a 2-amino acid?



Solution will appear here



Solution

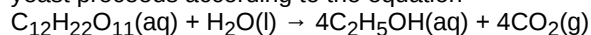
3) The glycaemic index (GI) indicates how quickly carbohydrates in food are broken down and raise a person's blood glucose level. The table below shows the percentage of amylose and amylopectin in the carbohydrate content of four foods, P, Q, R and S. Based on this information, which one of the foods listed would be expected to have the lowest GI value?

Food	Amylose (%)	Amylopectin (%)
P	30	70
Q	24	76
R	14	86
S	20	80

Solution will appear here

Solution

4) Industrially, ethanol, C_2H_5OH , is made by either of two methods. One method uses ethene, C_2H_4 , which is derived from crude oil. The other method uses a sugar, such as sucrose, $C_{12}H_{22}O_{11}$, and yeast, in aqueous solution. The production of C_2H_5OH from $C_{12}H_{22}O_{11}$ and yeast proceeds according to the equation



a. Determine the mass, in grams, of pure C_2H_5OH that would be produced from 1.250 kg of $C_{12}H_{22}O_{11}$ dissolved in water.

$$M(C_{12}H_{22}O_{11}) = 342 \text{ g mol}^{-1}$$

[Solution](#)

Solution will appear here

b. Complete the reaction by

i. writing the formula for the reactant "X" below and

ii. classify this type of reaction

iii. give an appropriate reagent for the final step.



[Solution](#)

Solution will appear here

c. CH_3COOH can be used in the production of esters.

i. Write a balanced chemical equation for the reaction of CH_3COOH with propan-1-ol using semi-structural formulas for all organic compounds.

ii. Write the IUPAC name for the ester product of the equation above.

[Solution](#)

Solution will appear here

5) There are a number of structural isomers for the molecular formula C_3H_6O . Three of these are propanal, propanone and prop-2-en-1-ol. The skeletal structure for the aldehyde propanal is as shown below.



i. Write the semi-structural formula for the ketone isomer propanone

ii. Draw the structural formula for the isomer prop-2-en-1-ol in the space provided below

[Solution](#)

Solution will appear here