1. (2 pts.) Draw the structures of the organic products that are formed in the following reaction.

[Chemical structures]

2. The structure of the disaccharide, isomaltose, is shown below:

[a) (2 pts.) Precisely describe the type of glycosidic bond that is present in isomaltose.

\[ \alpha - 1,6 \text{ glycosidic bond} \]

[b) (2 pts.) The monosaccharide unit on the upper left is a(n)

(i) aldopentose.
(ii) ketopentose.
[green] (iii) aldohexose.
(iv) aldoheptose.
(v) ketoheptose.

c) (1 pts.) Is this the \( \alpha \) or \( \beta \) form of isomaltose?

[Marked as \( \alpha \)]

d) (2 pts.) Is isomaltose a reducing sugar? In a few words, explain how you determined your choice.

[Underlined] yes; the monosaccharide unit to the right can ring open to an aldehyde which can then be oxidized to \(-\text{CHO} \)

e) (1 pts.) Hydrolysis of the disaccharide above gives the monosaccharides

(i) glucose and ribose.
(ii) fructose and galactose.
[green] (iii) glucose and galactose.
(iv) ribose and galactose.
(v) fructose and lactose.
1. (2 pts.) Draw the structures of the organic products that are formed in the following reaction.

\[
\text{CH₃}\text{C} = \text{N} - \text{H} + \text{NaOH} + \text{H₂O} \rightarrow \text{CH₃}\text{C} = \text{O} + \text{NH₂} - \text{CH₃} + \text{OH} \]

2. The structure of the disaccharide, gentiobiose, is shown below:

a) (2 pts.) Precisely describe the type of glycosidic bond that is present in gentiobiose.

\[
\beta - 1, 6 \text{ glycosidic bond}
\]

b) (2 pts.) The monosaccharide unit on the upper left is a(n)

(i) aldopentose.
(ii) ketopentose.
(iii) aldohexose.
(iv) aldoheptose.
(v) ketohexose.

c) (1 pts.) Is this the \(\alpha\) or \(\beta\) form of gentiobiose?

\[
\beta
\]

d) (2 pts.) Is gentiobiose a reducing sugar? In a few words, explain how you determined your choice.

Yes; see Version A answer.

e) (1 pts.) Hydrolysis of the disaccharide above gives the monosaccharides

(i) glucose and glucose.
(ii) fructose and galactose.
(iii) glucose and ribose.
(iv) ribose and galactose.
(v) fructose and lactose.