8 LibertyLink® soybean is a genetically modified crop. It was first grown in 1996 and used in food products from 1998. It has been grown in 6 countries and used in food products in 21 countries.

Table 8.1 summarises the modifications made to the soybean plant to produce LibertyLink® soybean.

Table 8.1

name of introduced gene	gene donor organism	gene product	function of gene product
pat	*Streptomyces viridochromogenes*	phosphinothricin *N*-acetyltransferase	stops action of glufosinate, a herbicide

(a) Explain how the modification made to produce LibertyLink® soybean may help to solve the global demand for food.

.....

.....

.....

.....

.....

.....

..... [4]

(b) **(i)** Name the type of enzyme that could be used to cut out the *pat* gene from *S. viridochromogenes*.

..... [1]

(ii) Name the enzyme that could be used to join the *pat* gene to a plasmid by forming phosphodiester bonds.

..... [1]

(c) Suggest reasons why LibertyLink® soybean is used in food products in 21 countries but only grown in 6 countries.

.....

.....

.....

.....

..... [3]

[Total: 9]