

NAME \Rightarrow [REDACTED]

ROLL NO \Rightarrow [REDACTED]

BT-608 \Rightarrow QUIZ 1

5/10

1)

- \rightarrow ① Bt endotoxins are the toxins which are developed by the *Bacillus Thuringensis* (BT) bacteria.
- ② This endotoxin has proved to be insecticidal in nature and therefore, it has become one of the important solutions against insects damaging the ~~the~~ crops / plants.
- ③ Bt endotoxins are present in the crystals that are formed during the sporulation process of Bt bacteria. when ~~the~~ these crystals are ingested by the insect, ~~the~~ proteolysis occurs & the toxins are released in the gut. This causes pores on the epithelial layer of the gut & because of that, the insects stop eating & ~~then~~ they eventually die of starvation.
- ④ Because of their effectiveness against insects, they are used for creating genetically modified crops & also, ^{for} biopesticides creation.

3)

- \rightarrow ① Biopesticides are made, primarily using the *Bacillus Thuringensis* (Bt) bacteria.
- ② Because of its property to be insecticidal, it has proven to be an effective Biopesticide.
- ③ Traditionally, chemical pesticides have been used to protect

the crops from insects.

② However, it has had several harmful effects on the environment, on the crops etc.

③ Hence, to avoid ~~the~~ these issues, it is a absolutely necessary to produce a successful biopesticide which can protect the crops from the insects but also does not have any harmful side effects on the crops & the environment.

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→ ① Golden Rice is the genetically modified form of Rice.

② Normally normal Rice is genetically modified to produce β -carotene which gives rise to Golden Rice.

③ On Research, we find that Rice has the pathway of producing β -carotene but because of absence of 2 proteins, it is unable to do so.

④ The 2 proteins are $(G1)$ & $(G2)$ proteins.

⑤ These proteins are introduced. The genes of these proteins are inserted in the DNA of rice & thus, Golden Rice is created.

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6

→ ① Edible vaccines are the products which on consumption, provide protection from a disease or a group of various diseases.

② Ideal properties of edible vaccines are →

① Non-toxic

② Non-pathogenic

③ Should have minimum side effects.

④ Affordable

⑤ should not cause problems to people having weak immune system.

8.

→

① Glyphosate is one of the two ~~most~~ most important parts in a herbicide.

② For crops to be Glyphosate herbicide tolerant, it should -

a) Develop barriers which can prevent the entering of Glyphosate in ~~plants~~ crops.

b) Producing certain proteins which can detoxify the effects of Glyphosate.

③

2)

b) DNA vaccines →

① DNA vaccine is one of the important application of Microbial Biotechnology.

② It is produced by conducting transformation of cells.

③ Gene which produces the protein which protects from a certain disease is incorporated in the cell's DNA & the cells are then injected.

④ Thus, immunity against that disease is gained.

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c)

→ ① Taxol is one of the drug produced by microbial biotechnology.

② $II+$ is used during the cancer treatment of the ~~paite~~ patients.