2. MINERAL NUTRITION

1 x 4 = 4 Marks

ROOT POINTS

1. **Mineral Nutrition** is the absorption, distribution and metabolism of various minerals from soil and atmosphere by plants.
2. **Inorganic nutrients** are obtained from the **air to the plants.**
3. The elements required in **large** quantities are called **macro nutrients**.
4. The elements required in **small** quantities are called **micro nutrients.**
5. These elements are the constituents of **carbohydrates, proteins and fats.**
6. Plants absorb minerals through **roots by either passive or active processes.**
7. These **minerals** are carried to all parts of plants through **xylem**.
8. **Nitrogen** is very essential element for plant life. But plants cannot use atmospheric nitrogen directly.
9. **Nitrogen Fixation**: In this process, atmospheric nitrogen is converted into ammonia, that is used as a nutrient for plants. $N_2 + 8H^+ + 8e^- + 16ATP \longrightarrow 2NH_3 + H_2 + 16ADP + 16Pi$
10. The enzyme **nitrogenase** plays an important role in nitrogen fixation.
11. Entry of oxygen towards nitrogenase is prevented by a chemical called **leg-haemoglobin**.
12. **Formation of root nodule**: **[IPE]**
    i. The roots of host Legume release sugars and amino acids which attract **Rhizobia**.
    ii. They multiply and get attached to the epidermis of **root hair cells** and then into the **cortex**.
    iii. The bacteria initiate nodule formation in the **cortex of the root**.
13. **Synthesis of amino acids** by plants involves (i) Reductive amination (ii) Transamination **[IPE]**

FRUITY Qs OF IPE

1 x 4 = 4 Marks

1. Explain the steps involved in the formation of root nodule.
2. Write in brief how plants synthesize amino acids.

SCENT BOXES- MEMORY HINTS

FOR SELECTIVE QUESTIONS

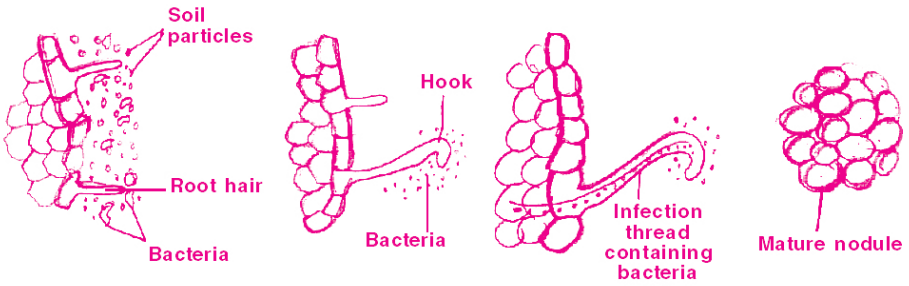
13. Explain the steps involved in the formation of root nodule.

A: Steps involved in the formation of root nodule: **[AP 17, 19,23][TS 16,17,20,23]**

1) The roots of host Legume release sugars and amino acids.
2) These sugars attract Rhizobia.
3) They multiply, colonise and get attached to the epidermis of root hair cells.
4) The root hairs curl and bacteria spread into the cortex of the root.
5) Then an infection thread is produced.
6) It carries the bacteria into the cortex.
7) The bacteria initiate nodule formation in the cortex of the root.
8) Then the bacteria present in the cortical cells, stimulate the host cells to divide.
9) This leads to the differentiation of specialised nitrogen fixing cells, which form root nodule.
10) The nodule thus formed establishes a direct vascular connection with the host, for exchange of nutrients.

SCENT BOX

Rhizobia likes
Sugars & Aminoacids
of Legumes.



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Boxes