



BIOLOGY

BOOKS - SANTRA BIOLOGY (BENGALI ENGLISH)

MINERAL NUTRITION

Multiple Choice Type Questions

1. Out of the following which element is required in largest quantity?

A. Phosphorus

B. nitrogen

C. calcium

D. sulphur

Answer: B



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2. Which are of the following is a macronutrient?

A. potassium

B. magnesium

C. copper

D. boron

Answer: A



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3. The major portion of the dry weight of plant
comprises of

A. calcium, magnesium, sulphur

B. carbon, hydrogen and nitrogen

C. carbon, hydrogen and oxygen

D. nitrogen, phosphorus and potassium

Answer: C



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4. A fall in ascorbic acid content in plants is the result of deficiency of

A. nitrogen

B. molybdenum

C. zinc

D. carbon

Answer: B



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5. Absorption of water and calcium is increased by

A. manganese

B. zinc

C. boron

D. copper

Answer: A



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6. Boron in green plant assist in

A. acting an enzyme cofactor

B. photosynthesis

C. sugar transport

D. activation of enzyme

Answer: C



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7. Hydroponic is

A. plant growth in liquid culture medium

B. plant growth in mineral deficient soil

C. submerged hydrophytes plant

D. plant growth under laboratory growth

Answer: A



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8. Exanthema in Citrus is a result of deficiency of

A. boron

B. copper

C. calcium

D. molybdenum

Answer: B



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9. The drought spot of apple is caused due to the deficiency of

A. copper

B. nitrogen

C. boron

D. magnesium

Answer: C



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10. In nitrate assimilation, reduction of nitrate to ammonia is mediated by

A. nitrate reductase

B. nitrite reductive

C. both 'a' and 'b'

D. none of these

Answer: B



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11. Roots can absorb minerals from the soil when they are

A. solid state

B. liquid state

C. ionic state

D. gaseous state

Answer: C



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12. Define apoplast



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13. Presence of phosphorus

A. bring about healthy root growth

B. promotes fruit ripening

C. retards protein formation

D. none of these

Answer: C



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14. what is the significance of the study of mineral nutrition

A. it tells what mineral are present in the soil

B. it informs which element is essential and which amount is necessary for a particular plant

C. it is of no practical significance

D. it indicate how much irrigation is needed by the plant

Answer: B



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15. In plants a common symptom caused by deficiencies of P, K, Ca and Mg is

- A. bending of leaf tip
- B. formation of anthocyanin
- C. poor development of vasculature
- D. appearance of dead necrotic areas

Answer: D



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16. Ion uptake is called active because

- A. ions are active
- B. ions move freely
- C. energy is expended
- D. ions move positively

Answer: C



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17. Active transport of molecules from outside to inside across a membrane requires

- A. cyclin AMP
- B. acetylcholine
- C. ATP
- D. none of them

Answer: C



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18. The efflux of ions from the cell is enhanced by

A. heat

B. removal of Ca^{++}

C. both of these

D. increased O_2 supply

Answer: D



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19. Bidirectional translocation of minerals take place through

A. xylem

B. phloem

C. parenchyma

D. cambium

Answer: B



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20. The movement of mineral ions into plant root cells as a result of

- A. endocytosis
- B. osmosis
- C. passive absorption
- D. active absorption

Answer: C



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21. The role of inorganic nutrients in plant growth was at first indicated by

A. Wood Ward

B. Knop

C. Stewart

D. De Saussure

Answer: B



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22. Which essential nutrient element required by plants in least quantity

A. chlorine

B. zinc

C. molybdenum

D. manganese

Answer: C



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23. Permeability of protoplasm is accelerate by

A. Na

B. K

C. Ca

D. P

Answer: B



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24. Which of the following is not caused by deficiency of mineral nutrition?

A. necrosis

B. etiolation

C. chlorosis

D. shortening of internodes

Answer: B



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25. Cultivation by sand culture is also called

A. soil-less cultivation

B. green house effect

C. photorespiration

D. none of these

Answer: D



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26. Phosphorus is a structural element in

A. fat

B. starch

C. nucleotide

D. carbohydrate

Answer: C



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27. Premature leaf fall occurs due to deficiency of

A. calcium

B. iron

C. phosphorus

D. sulphur

Answer: C



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28. Inorganic nutrients are present in the soil
in the form of

A. molecules

B. atoms

C. electrically charged ions

D. parasites

Answer: C



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29. Plants require one one of the following for formation of ATP

A. N, Ca

B. N, P

C. N, Cu

D. K

Answer: B



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30. Cyanobacteria helps farmers by

A. reducing the acidity of soil

B. increasing soil fertility of soil

C. neutralising alkalinity of soil

D. water logging

Answer: A



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31. What are porins?



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32. Magnesium is an important constituent of which of the following pigment?

A. enzyme

B. chlorophyll

C. florigen

D. haemoglobin

Answer: B



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33. Zinc is used up by plants in the form of

A. Zn

B. Zn^{++}

C. $ZnSO_4$

D. $Zn(NO_3)_2$

Answer: B



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34. Soil salinity is measured by

A. porometer

B. potometer

C. conductivity meter

D. calorimeter

Answer: C



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35. Biofertilizer present in root nodules of non-leguminous plants is

A. Azotobactor

B. Clostridium

C. Frankia

D. Aerohizobium

Answer: C



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36. Define toxic concentration



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37. The presence of large amount of nitrogen in the atmosphere is due to

A. decomposers

B. nitrites

C. nitrogen cycle

D. ammonia

Answer: C



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38. An essential element is that which

A. is found in plant ash

B. is available in soil

C. improves healths of the plant

D. is irreplaceable and indispensable for
growth of plants

Answer: D



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39. Mottled chlorosis occurs due to deficiency of

A. nitrogen

B. phosphorus

C. potassium

D. sulphur

Answer: C



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40. Enzyme nitrogenase is required for

- A. nitrification
- B. nitrite reduction
- C. nitrate reduction
- D. nitrogen fixation

Answer: D



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41. Nitrite is changed to nitrate by

- A. Nitrobacter
- B. Nitrosamines
- C. Pseudomonas
- D. Clostridium

Answer: A



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42. Which one is not a microelement for plants?

A. Cu

B. Zn

C. Ca

D. boron

Answer: C



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43. An anaerobic bacterium capable of nitrogen fixation is

- A. Chlorobium
- B. Rhodospirillum
- C. Clostridium
- D. Azotobacter

Answer: C



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44. Which is not caused by deficiency of mineral?

A. Chlorosis

B. etiolation

C. necrosis

D. shortening of internodes

Answer: B



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45. Nitrifying bacteria converts

A. nitrate to nitrogen

B. ammonia to nitrogen

C. nitrogen into soluble form

D. ammonia to nitrate

Answer: D



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46. Zn, Cu, Fe and Mo are

A. macronutrients

B. nonessential elements

C. trace elements

D. none of the above

Answer: C



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47. Which is incorrect about ion channels?

A. they are proteins

B. all ions pass through same channel

C. movement through them is simple
diffusion

D. movement through them is from high to
low concentration

Answer: B



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48. What is Balanced nutrient solution?



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49. Plasma membrane does not have carrier molecules for

- A. active transport
- B. simple diffusion
- C. facilitated diffusion

D. $Na^+ - K^+$ pump

Answer: B



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50. An element essential as electron carrier is

A. potassium

B. zinc

C. calcium

D. iron

Answer: D



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51. An immobile element in plants is

A. calcium

B. potassium

C. phosphorus

D. nitrogen

Answer: A



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52. Appearance of brown spots surrounded by chlorotic veins is a toxicity symptom of

A. Mo

B. Mn

C. Mg

D. Zn

Answer: B



53. Manganese is required for

- A. chlorophyll synthesis
- B. plant cell wall formation
- C. photolysis of water in photosynthesis
- D. nucleic acid synthesis

Answer: C



54. Which one of the following elements in plants is not remobilised?

A. P

B. Ca

C. K

D. S

Answer: B



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55. Nitrifying bacteria

- A. oxidize ammonia to nitrates
- B. convert free nitrogen to nitrogenous compounds
- C. convert proteins to free nitrogen
- D. reduce nitrates to free nitrogen

Answer: A



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56. The function of leghaemoglobin in the root nodules of legume is

- A. inhibition of nitrogenase activity
- B. oxygen removal
- C. nodule differentiation
- D. expression of nif gene

Answer: D



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57. Best defined function of manganese in green plants is

- A. N_2 - fixation
- B. water absorption
- C. photolysis of water
- D. calvin cycle

Answer: C



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58. Which compounds are called amides?



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59. An element playing important role in nitrogen fixation is

A. zinc

B. manganese

C. copper

D. molybdenum

Answer: D



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60. Which one of the following is not micronutrient?

A. boron

B. magnesium

C. molybdenum

D. zinc

Answer: B



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61. Which of the following is a bacterium involved in denitrification?

- A. Nitrobacter
- B. Azotobacter
- C. Nitrosomonas
- D. Pseudomonas

Answer: D



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62. The first stable product of fixation of atmospheric nitrogen in leguminous plant is

A. ammonia

B. NO_3^-

C. NO_2^-

D. glutamate

Answer: A



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63. Deficiency symptoms of nitrogen and potassium are visible first in

- A. Senescent leaves
- B. Young leaves
- C. roots
- D. buds

Answer: A



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64. Excess of manganese inhibits the translocation of - to the shoot apex

A. calcium

B. potassium

C. Iron

D. magnesium

Answer: A



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65. Necrosis (die-back) of the tip of young leaves is caused due to the deficiency of

A. Iron

B. manganese

C. zinc

D. copper

Answer: B



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66. Nitrogenase enzyme is a

- A. magnesium - iron protein
- B. molybdenum(Mo)-iron protein
- C. iron-copper protein
- D. nickel iron protein

Answer: B



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67. Minerals known to be required in large amounts for plants growth include

A. magnesium , sulphur , iron, zinc

B. phosphorus, potassium, sulphur, calcium

C. calcium, magnesium, manganese, copper

D. potassium, phosphorus, selenium, boron

Answer: B



68. Which is essential for the growth of tip?

A. Mn

B. Zn

C. Fe

D. Ca

Answer: D



69. In which of the following all three are macronutrients.

A. Iron, copper, molybdenum

B. Molybdenum, magnesium, manganese

C. Nitrogen, magnesium, phosphorus

D. Boron, zinc, manganese

Answer: C



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Choose More Than One Options

1. What are the macronutrients ?

A. Ca

B. Cu

C. Mo

D. Mg

Answer: A::B



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2. Define transamination



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3. Name the element increases the membrane permeability

A. Na

B. Mn

C. K

D. Cu

Answer: A::C



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4. Name the macroelement, those have importane function in cell division

A. Potassium

B. Calcium

C. Nitrogen

D. Phosphours

Answer: C::D



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5. Necrosis occurred, due to the deficiency of

A. P

B. Ca

C. Mg

D. Cu

Answer: B::D



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6. Which are the two macronutrients that usually play important role in limiting plant growth globally?

A. P

B. Mg

C. Cu

D. N_2

Answer: A::D



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7. Symbiotic nitrogen fixing bacteria are

A. Rhizobium

B. Ainus

C. Clostridium

D. Myrica

Answer: A::B::D



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8. Free living aerobic bacteria are

A. Clostridium

B. Bacillus

C. Derrxia

D. Beijerinckia

Answer: C,D



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9. Who demonstrated the importance of minerals in plant nutrition by water and sand culture?

A. Sachs

B. Helmont

C. Knop

D. Saussure

Answer: A:C



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10. Name the element which are acting on enzyme acitivator?



Answer: C::D



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11. Free living nitrogen fixing blue green algae are

A. Anabaena

B. Aulosira

C. Nostoc

D. Mycobacterium

Answer: A::B::C



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12. Important function of phosphorus are

A. Cell division

B. energy transfer

C. formation of chlorophyll

D. Nodule formation in legume

Answer: A::B



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1. The deficiency of magnesium result in _____ chlorosis in the plants.



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2. _____ helps in the conversion of oxalic acid into calcium oxalate in plant cells.



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3. The deficiency of _____ causes the death of the stem and root apices.



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4. The deficiency of copper in citrus results in disease known as _____.



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5. Drought spot of apples is caused by the deficiency of _____.



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6. The technique of culturing plants in nutrient solutions is known as _____.



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7. Abbreviation NPK means _____.





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8. The conversion of ammonia to nitrates is called _____.



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9. Absorption of mineral ions is a selective process and takes place _____ concentration.



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10. Sundew is an _____ plant.



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11. Elements which are required by the plants in minute quantities are called _____.



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12. Carbon is absorbed by plant as _____.



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13. Elements which are required in large quantities by the plants are called _____.



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14. Oxygen is absorbed in the molecular form the _____ by the plant.



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15. The common symptom of nitrogen deficiency is _____ in plants.



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16. The deficiency of potassium produces _____ growth in plants.



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17. The trace element constituent of the enzyme nitrate reductase is _____.



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18. Excessive nitrogen supply to the plants reduces the _____ system.



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True Or False Statement Questions

1. What are trace elements?



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2. Chlorosis develops due to nitrogen and sulphur deficiency.



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3. Whiptail disease of cauliflower is caused by the deficiency of molybdenum.





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4. The essentially of micronutrients are required only in trace quantities.



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5. Deficiency of oxygen increases the rate of salt absorption.



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6. Calcium is an element i.e., essential for both plants and animals.



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7. K^+ ions involve in stomatal regulation.



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8. The pigments essential for the N_2 fixation by leguminous plants is leghaemoglobin.



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9. Oxygen is the most abundant element in plant body.



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10. Rhizobium is the best known symbiotic nitrogen fixing bacterium.



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Very Short Answer Type Questions

1. Give one function of Rhizobium.



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2. Define hydroponics.



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3. Name the enzyme responsible for nitrite reduction.



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4. Expand NAD.



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5. From where do the plants receive hydrogen?



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6. Which are the two macronutrients that usually play important role in limiting plant growth globally?



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7. What are Chelators?



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8. Write two sulphur containing amino acids.



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9. Name of the element which provides characteristic odour of onion, garlic etc?



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10. Name of the element which helps in the formation of middle lamella?



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11. Define diazotrophs?



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12. Define premature abscission.



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13. Name nitrogen fixing symbiotic bacteria.



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14. What is chlorosis?



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15. Name the principle mineral anion in extra cellular fluid.



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16. Name the pigment found in root nodules of leguminous plants.



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17. Which mineral elements is common in heme proteins - cytochromes and non-heme ferredoxin?



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18. Which is the most abundant element in the plant body?



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19. Name the enzyme involved in biological nitrogen fixation.



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20. Name a non-metallic macronutrient.



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21. Name an essential element absorbed by plant from air.



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22. Name the enzyme which possibly acts as an ion carrier.



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23. Name a crop that can be grown without the requirement of addition of nitrogen to the soil.



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24. Name a trace element which increases the absorption of water and calcium.



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25. Write two symbiotic nitrogen fixing bacteria.



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26. Write the full form of GOGAT.



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27. Write one name of denitrifying bacteria.



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Short Answer Type Questions

1. Bring out similarity and difference between leghaemoglobin and haemoglobin.



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2. Nitrogen is an essential element for plants and is found in abundance as atmospheric nitrogen. But most plants are unable to use it.

Why is it so and in what form do plants utilize them?



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3. Name two free living microorganisms which can fix nitrogen. Also write the name of the water fern and a gymnosperm with whom some cyanobacteria have symbiotic association.



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4. How do some bacteria carry out nitrification? What are such bacteria called?



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5. Define denitrification



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6. Why magnesium is important for plants?



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7. What is denitrification?



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8. Why do plants of legume family contain more protein than other plants?



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9. What is nitrification?





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10. Plants absorb nitrogen from soil by what forms?



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11. What is necrosis?



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12. What is leghaemoglobin?



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13. What is nif gene?



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14. Define micronutrient with example



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15. Differentiate between macro and microelements.



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16. Define nitrogen cycle



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17. Define mineral nutrition



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18. Why do plants need potassium and magnesium?



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Long Answer Type Questions

1. What are essential elements?



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2. Describe role of manganese



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3. Define microelement with example



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4. Define macronutrient with example



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5. Write short notes on : (a) Reductive amination,



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6. Write short notes on : (b) Transamination.



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7. What do you understand by heterotrophic mode of nutrition? Elaborate your answer with

suitable examples.



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Ncert Questions

1. All elements that are present in a plant need not be essential to its survival'. Comment.



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2. Why is purification of water and nutrients salts so important in studies involving mineral nutrition using hydroponics?



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3. Explain with examples: macronutrients



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4. Name one deficiency symptoms in plants.



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5. If a plant shows a symptom which could develop due to deficiency of more than one nutrient, how would you find out experimentally, the real deficient mineral element?



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6. Why is that in certain plants deficiency symptoms appear first in younger parts of the plant while in other they do so in mature organs?



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7. How are the minerals absorbed by the plants?



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8. Define Macronutrients



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9. What are the steps involved in formation of a root nodule?



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10. Which of the following statements are true? If false, correct them:

(a) Boron deficiency leads to stout axis.



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11. Which of the following statements are true? If false, correct them:

(b) Every mineral element that is present in a cell is needed by the cell.



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12. Which of the following statements are true? If false, correct them:

(c) Nitrogen as a nutrient element, is highly immobile in the plants.



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13. Which of the following statements are true? If false, correct them:

(d) It is very easy to establish the essentiality

of micronutrients because they are required only in trace quantities.



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