

SARASWATI



HEAD OFFICE

208, CD, LOCAL SHOPPING CENTER
AGGARWAL SHOPPING PLAZA,

BRANCH -1

AYODHYA CHOWK SEC -3
ROHINI

BRANCH -2

DC CHOWK SEC- 9, ROHINI

9TH & 10TH MATHS / SCIENCE

11TH & 12TH – PHYSICS / CHEMISTRY / MATHS / BIOLOGY

EXCLUSIVE BATCH FOR NEET / JEE ASPIRANTS

Ph no. 9696 500 500 / 9696 400 400

Ch- 12(Mineral Nutrition)

1. Name two macronutrients that plants take from air.

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2. Why are the elements C, H, O and N called structural elements?

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3. Name the macronutrient which is a component of all organic compounds, but is not obtained from soil.

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4. Which element is required by plants in the greatest amount?

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5. What happens to iron in electron transport?

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6. Which component of electron transport contains both iron and sulphur?

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7. What are ion-channels?

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8. Why are majority of plant nutrient elements called mineral nutrients?

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9. Name the element which is a limiting nutrient for both natural and agricultural ecosystems.

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10. What is meant by nitrogen fixation?

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11. How are organisms like Pseudomonas and Thiobacillus of great significance in nitrogen cycle?

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12. Nitrogen fixation is shown by prokaryotes and not eukaryotes. Comment.

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13. Name an anaerobic nitrogen-fixing bacterium.

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14. Name one non- symbiotic nitrogen-fixing prokaryote.

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15. A farmer adds Azotobacter culture to soil before sowing maize. Which mineral element is being replenished?

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2 marks

16. Why is purification of water and nutrient salts so important in studies involving mineral nutrition, using hydroponics?

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17. What is hydroponics? Give one application of this technique.

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

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

20. (a) Why are symptoms of nitrogen deficiency related to molybdenum deficiency?
(b) Mention two symptoms of nitrogen deficiency in plants.

21. How are amides formed? Name two important amides found in plants.

3 marks

22.



(a) Name the technique shown in the figure and the scientist who demonstrated this technique for the first time.

(b) Name at least three plants for which this technique can be employed for their commercial production.

(c) What is the significance of aerating tube and feeding funnel in this set-up?

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

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23. Give the information about the following mineral nutrients in plants as asked against each:

- (i) **Sulphur:** Any one amino acid in which it is present, effect of deficiency on flowering.
- (ii) **Manganese:** Chemical form in which absorbed from the soil, the best defined function in photosynthesis.
- (iii) **Calcium:** Two Roles during cell division.

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24. How are the minerals absorbed by the plants?

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25. What is meant by flux? Describe its two kinds.

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26. Describe transmination.

5 marks

25. Name at least four different deficiency symptoms in plants. Describe them and correlate them with the concerned mineral deficiency.

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26. Explain with examples: macronutrients, micronutrients, beneficial nutrients, toxic elements and essential elements.

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27. Represent schematically the nitrogen cycle. Name the organisms involved in this cycle.

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

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29. What are the conditions necessary for fixation of atmospheric nitrogen by Rhizobium? What is their role in N₂ fixation?

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30. Though nitrogen is abundant (78%) in the air, only a few living organisms can utilise this free nitrogen; only some prokaryotic organisms (like bacteria and cyanobacteria) are capable of fixing nitrogen.

- (a) What is biological nitrogen fixation?
- (b) Name the enzyme that catalyses the reduction of nitrogen to ammonia during biological nitrogen fixation.
- (c) Name (i) a bacterium and (ii) a cyanobacterium, that are free-living N₂-fixers.
- (d) Name two species of symbiotic N₂-fixing bacteria.
- (e) What value can you learn from these microbes?

31. If you uproot any legume/pulse plant before its flowering, you can see some spherical/oval outgrowths, called nodules, on the roots. The nodules are pink in colour.

- (a) What is the pink colour of the nodule due to? Why is the pigment named so?
 - (b) What is the function/role of the pigment mentioned above?
 - (c) How many ATP molecules are used in the reduction of one molecule of nitrogen?
 - (d) What is the value shown by these symbiotic bacteria?

32. Plants obtain most of their inorganic nutrients from the soil, which are formed by the weathering of rocks.

- (a) What other roles does soil play in plant growth?
 - (b) Why are these inorganic nutrients called mineral nutrients?
 - (c) What value is shown to us by the inorganic nutrients of plants?

33. Though plants take in more than 60 elements from the soil, all of them are not considered essential for plant growth and development.

- (a) Mention the three criteria of essentiality of elements.
 - (b) What are deficiency symptoms?
 - (c) What moral value do you understand from this concept?

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34. Micronutrients are required in very low quantities; there is a very narrow range of their optimum concentration, above which they become toxic and below which they show deficiency symptoms.

- (a) Toxicity of manganese may be manifested as deficiency symptoms of iron, calcium and magnesium. Justify.

(b) Mention the value indicated by this.