



BIOLOGY

BOOKS - TRUEMAN'S BIOLOGY (ENGLISH)

MINERAL NUTRITION

Multiple Choice Questions

1. Photosynthetic nutrition in plants is also known as

- A. holophytic nutrition
- B. chemotrophic nutrition
- C. heterotrophic nutrition
- D. heteroholophytic nutrition

Answer: 1



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2. An essential is that which

A. is found in plant ash

B. is available in soil

C. improves health of plants

D. is irreplaceable and indispensable for growth of plants

Answer: 4



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3. Plants require minor elements in small quantities, their major role is to act as

- A. regulation of cell division of meristematic sites
- B. co-factors of enzymes
- C. building blocks of important amino acids
- D. precursors of plant hormones

Answer: 2



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4. Micronutrients are

- A. less important than macronutrients

- B. as important as macronutrients
- C. having no role in plant nutrition
- D. omitted from culture medium without any detrimental effect.

Answer: 2



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5. Importance of microelements was recognised late due to

- A. their toxicity
- B. presence as contaminants in macronutrients
- C. negligible role played by them in plant physiology
- D. leakage from roots.

Answer: 2



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6. An essential element derived from soil only is called

- A. micronutrient
- B. macronutrient
- C. mineral element
- D. macroelement

Answer: 3



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7. The criteria for the essentiality of a mineral element were given by

A. Arnon and Stout

B. Hoagland

C. Hopkins

D. Sachs and Liebig

Answer: 1



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8. Carl Maze (1915) divided mineral elements into two categories on the basis of

- A. quantity in which these are required
- B. quality and action
- C. toxicity they cause
- D. path they travelled in plant.

Answer: 1



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9. Choose the correct one.

- A. C, H, O are called frame work elements
- B. Ca^{2+} , Mg^{2+} , K^{+} are protoplasmic elements
- C. C, H, O, N are balancing elements
- D. All of the above

Answer: 1



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10. Essential micronutrients are also known as

- A. tracer elements
- B. trace elements
- C. radioisotopes
- D. frame work elements

Answer: 2



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11. Zinc is a

- A. (a) tracer element
- B. (b) trace element
- C. (c) macronutrient
- D. (d) monomineral nutrient

Answer: 2



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12. Microelements are those essential elements which are required by the plants in concentration

- A. less than 10m mole/kg of dry matter.

B. less than 1m mole/kg of dry matter.

C. more than 1 $\mu\text{g/g}$ of dry matter.

D. equal to than 20 $\mu\text{g/}$ of dry matter

Answer: 1



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13. The concentration of a macroelement per gm of dry matter in plants is at least

A. 1000 $\mu\text{g/gm}$ of dry matter

B. 100 $\mu\text{g/gm}$ of dry matter

C. 1500 $\mu\text{g/gm}$ of dry matter

D. 995 $\mu\text{g/gm}$ of dry matter.

Answer: 1



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14. What is an essential element ?

- A. (a) An element present in the soil.
- B. (b) An element present in the plant.
- C. (c) An element that improves growth of plant.
- D. (d) An element without which a plant will not grow and complete its life cycle.

Answer: 4



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15. the ion which is commonly found free in the cell is

A. potassium

B. borate

C. sulphur

D. nitrogen

Answer: 1



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16. The major portion of the dry weight of plants comprises of

Or

Frame work elements in plants are

A. N, P, K

B. Ca, Mg, S

C. C, N, H

D. C, H, O

Answer: 4



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17. It is possible to determine whether an element is essential by observing growth of plants

A. in soil form which the particular element is removed

B. in soil in which only the particular element is present

C. in a inert medium to which solution of only the particular element is added

D. in a inert medium to which a nutrient solution excluding that particular element is added

Answer: 4



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18. Most abundant elements in the living cells are

A. C, O, N and P

B. C, H, O and Ca

C. C, H, O and N

D. C, H, Mg and N

Answer: 3



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19. Which one is an essential mineral, not constituent of any enzyme but stimulates the activity of many enzymes?

A. Na

B. B

C. K

D. C

Answer: 3



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20. A trace element essential for plant growth and radioactive isotope which is used in cancer therapy is known as

A. iron

B. calcium

C. cobalt

D. sodium

Answer: 3



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21. Choose the correct statement.

A. (a) Solution culture (hydroponics) contains all essential elements except one, the usefulness of which is to be determined

- B. (b) In Aeroponics roots are dipped in solution culture rich in air
- C. (c) Potometer is used to measure degree of opening of stomata
- D. (d) All of the above

Answer: 1



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22. The agent that keeps metals in the soluble state is called

- A. chelating agent
- B. balancing agent
- C. buffer agent

D. catalytic agent.

Answer: 1



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23. The most crucial event in nature governing nutrient balance is

- A. primary production
- B. secondary production
- C. nutrient cycling
- D. gross production

Answer: 3



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24. Which has both Fe and Cu as prosthetic group?

- A. Haemoglobin
- B. Dehydrogenase
- C. Polymerase
- D. Cytochrome oxidase

Answer: 4



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25. Which of the following is a component of coenzyme A, vitamin biotin, thiamine and mustard oil and whose deficiency results in decrease in nodule formation is

A. Cu

B. Ca

C. S

D. Mn

Answer: 3



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26. The deficiency of boron results in all except

A. top sickness

B. browning of head in cauliflower

C. internal cork of apple

D. marsh spot disease

Answer: 4



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27. Boron in green plants assists in

- A. in activation of enzymes
- B. in nitrogen fixation
- C. in photosynthesis
- D. in sugar transport

Answer: 4



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28. Match the correct option of deficiency symptoms.

A. (a) Cu - exanthema

B. (b) Mg - interveinal chlorosis and upward curling of
leaves

C. (c) Zn - malformation of leaves and fruits

D. (d) All of the above

Answer: 4



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29. Which of the following is non-symbiotic biofertilizer

A. (a) Azotobacter

B. (b) Nostoc

C. (c) Rhizobium

D. (d) frankia

Answer: 1



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30. The most important function of Rhizobium is

A. nitrogen assimilation

B. nitrogen fixation

C. ammonification

D. nitrification

Answer: 2



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31. Which gene cluster is responsible for nitrogen fixation in bacteria?

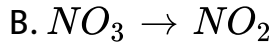
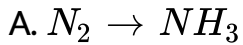
- A. nod, nif, fix
- B. nod, ndf, nfx
- C. nod, nix, nfx
- D. ndx, nif, fix

Answer: 1



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32. N_2 fixation is



C. $N_2 \rightarrow$ amino acid

D. both (1) and (2)

Answer: 1



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33. The process of N_2 fixation in root nodules is controlled by

A. nif

B. NAA

C. IAA

D. ABA

Answer: 1



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34. Enzyme involved in nitrogen assimilation

A. nitrogenase

B. nitrate reductase

C. transferase

D. transaminase

Answer: 2



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35. Nitrate reductase forms



Answer: 3



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36. If by radiation all nitrogenase enzyme are inactivated, then there will be no:-

- A. (a) fixation of atmospheric nitrogen
- B. (b) conversion from nitrate to nitrite in legumes
- C. (c) conversion from ammonium to nitrate in soil
- D. (d) fixation of nitrogen in legumes

Answer: 4



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37. Plants that have mutualistic relations with nitrogen-fixing bacteria receive from the bacteria

- A. ammonium
- B. amino acids
- C. nitrate

D. nitrite

Answer: 1



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38. Plants that have mutualistic relations with nitrogen-fixing bacteria provide the bacteria with

A. N_2

B. enzymes

C. sugars

D. nitrite

Answer: 3



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39. Nitrosomonas and Nitrosococcus promote

- A. reduction of ammonia
- B. oxidation of nitrite
- C. reduction of nitrate
- D. oxidation of ammonia

Answer: 4



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40. The Nitrobacter and Nitrocystis

- A. (a) oxidise nitrite to nitrate

B. (b) oxidise nitrate

C. (c) reduce nitrite

D. (d) reduce nitrate

Answer: 1



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41. Reduction is the term used when conversion of takes place

A. nitrate to nitrite

B. nitrite to nitrate

C. ammonia to nitrogen

D. All of the above

Answer: 1



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42. Certain bacteria living in the soil poor in oxygen convert nitrates into nitrites and then to free nitrogen and such bacteria are termed as

Or

The bacteria which convert $NO_3 \rightarrow$ Free N_2 are called as

- A. nitrogen fixing bacteria
- B. denitrifying bacteria
- C. ammonifying bacteria
- D. saprophytic bacteria.

Answer: 2



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43. Bacteria which break down the dead organisms of the soil into nitrogen compounds are termed

- A. denitrifying bacteria
- B. nitrifying and ammonifying bacteria
- C. nitrogen fixing bacteria
- D. parasitic bacteria.

Answer: 2



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44. The nodules in a plant root where nitrogen fixing bacteria live form from cells of the

- A. epidermis
- B. cortex
- C. endodermis
- D. vascular tissue

Answer: 2



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45. The source of energy for non-biological nitrogen fixation is

- A. by ionizing events such as lightning and effect of cosmic rays
- B. ferredoxin enzyme and nitrogenase
- C. by reduction of proteins to ammonia
- D. by oxidation of ammonia to protein

Answer: 1

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46. *Vicia faba* and *pisum sativum* are recommended for rotation of crops because they

- A. (a) require small amount of water
- B. (b) are cash crops

C. (c) help in nitrogen fixation of soil

D. (d) kill all the harmful insects.

Answer: 3



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47. Nitrogen fixing enzyme in root nodule is

A. nitrase

B. nitrogenase

C. nitrosomonas

D. nitrogen esterase

Answer: 2



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48. Which of the following is an incorrect match ?

- A. Free living nitrogen fixing bacteria - Azotobacter
- B. Symbiotic nitrogen fixing cyanobacteria - Anabaena
- C. Symbiotic nitrogen fixing cyanobacteria - Frankia
- D. Symbiotic nitrogen fixing bacteria - Xanthomonas

Answer: 3



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49. Which of the following can use elemental nitrogen as their nitrogen source

- A. anabaena
- B. Nitrobacter
- C. Nitrosomonas
- D. All of the above

Answer: 1



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50. Nitrogen fixation by organism requires conditions that are

- A. (a) highly alkaline
- B. (b) anaerobic
- C. (c) saturated with sunlight
- D. (d) free of water

Answer: 2



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51. Nodule formation is reduced in legume roots due to the deficiency of

- A. chlorine
- B. boron
- C. sulphur
- D. (2) and (3)

Answer: 4



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52. On earth the largest reservoir of nitrogen is

- A. the oceans
- B. granite rocks
- C. the air
- D. the soil

Answer: 3



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53. Organisms that fix nitrogen in aquatic habitats are

- A. green algae
- B. cyanobacteria

C. brown algae

D. protozoa

Answer: 2



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54. In root nodules of leguminous plants, the pigment leghamoglobin that gives pink colour to the nodules, is present in the

A. (a) intercellular spaces

B. (b) cytosol of bacteroids

C. (c) inside the bacterial wall

D.(d) outside the peribacterial space in the cytosol of nodule cells.

Answer: 4



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55. Besides providing pink colour to the root nodules, leghaemoglobin performs the function of

- A. (a) protecting enzyme nitrogenase from free oxygen
- B. (b) transporting nitrogen to host cells
- C. (c) protecting bacteroids from the enzymes of host cell
- D. (d) protecting leakage of fixed nitrogen to the soil atmosphere

Answer: 1



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56. Major nitrogen fixation is carried out by

- A. lightning
- B. chemical industries
- C. symbiotic bacteria
- D. leaching

Answer: 3



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57. Which one plays an important role in energy metabolism?

A. Calcium

B. Sodium

C. Sulphur

D. Phosphorus

Answer: 4



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58. Most of the plants obtain nitrogen from the soil in the form of

A. nitrites and molecular nitrogen

B. nitrates and ammonium salts

C. nitrites and ammonium salts

D. hyponitrites and nitrates

Answer: 2



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59. Deficiency of nitrogen produces

A. blossom end rot of tomato

B. Chlorosis

C. die back disease

D. reduced respiration

Answer: 2



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60. Plants absorb sulphur in the form of

- A. SO_2 from soil
- B. SO_2 from air
- C. both (1) and (2)
- D. SO_3 from soil

Answer: 2



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61. Which of the following is an micronutrient ?

A. Mg

B. Zn

C. Ca

D. P

Answer: 2



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62. Which of the following is not an essential micronutrient ?

A. Boron

B. Sodium

C. Manganese

D. Molybdenum

Answer: 2



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63. Which one of the following elements is not required by plants for their healthy normal growth?

A. Calcium

B. Magnesium

C. Lead

D. Iron

Answer: 3



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64. Carbon becomes available to crop plants in the form of

- A. amino acids
- B. carbonates
- C. carbon dioxide
- D. element carbon

Answer: 3



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65. On the basis of symptoms of chlorosis in leaves, a student inferred that this was due to deficiency of nitrogen. This

inference could be correct only if we assume that yellowing of leaves appeared first in

- A. old leaves
- B. young leaves
- C. mature leaves followed by young leaves
- D. young leaves followed by mature leaves

Answer: 1



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66. Fertilizers are usually enriched in NPK which denotes

- A. iron, manganese and zinc
- B. nitrogen, phosphorus and zinc

C. calcium and boron

D. nitrogen, phosphorus and potassium

Answer: 4



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67. Which one is component of ferredoxin ?

A. Zn

B. Mn

C. Cu

D. Fe

Answer: 4



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68. Potassium is involved in

- A. photosynthesis
- B. promoting many enzymatic activities that regulate plant processes
- C. providing reddish pigmentation to fruits
- D. formation of vascular cambium

Answer: 2



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69. The deficiency symptom of phosphorus is

- A. lodging of cereals
- B. leaf curl
- C. stunted growth
- D. wrinkling of grains

Answer: 3



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70. Due to deficiency of phosphorus

- A. the rate of protein synthesis is increased
- B. the rate of protein synthesis is decreased
- C. there is no effect on the rate of protein synthesis

D. the rate of protein synthesis initially declines but increases later on

Answer: 2



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

- A. bending of leaf tips
- B. formation of anthocyanin
- C. poor development of vasculature
- D. chlorosis

Answer: 4



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72. Pungent principle, a sinigrin, of crucifers is a

- A. glycoside having sulphur
- B. glycoside having cyanide
- C. glycoside having special amino acids
- D. tannin

Answer: 1



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73. Which of the following is a sulphur containing amino acid

A. methionine

B. asparagine

C. serine

D. proline

Answer: 1



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74. Calcium is mainly a component of

A. primary walls

B. secondary wall

C. chlorophyll

D. middle lamella

Answer: 4



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75. White-bud condition in maize is produced due to the deficiency of

A. iron

B. molybdenum

C. zinc

D. boron

Answer: 3



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76. Deficiency of molybdenum cause

- A. poor development of vasculature
- B. bending of leaf tip
- C. brown heart of turnip
- D. mottling & marginal necrosis of leaves

Answer: 4



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77. In crucifers whiptail disease is caused due to the deficiency of

- A. manganese
- B. Magnesium

C. molybdenum

D. iron

Answer: 3



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78. Which of the following microelements is related to the synthesis of plant auxin (IAA) ?

A. Molybdenum

B. Chlorine

C. Zinc

D. Boron

Answer: 3



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79. Reclamation disease of cereals and legumes is caused by the deficiency of

- A. manganese
- B. phosphorus
- C. copper
- D. boron

Answer: 3



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80. Death of stem and root tips occurs due to the deficiency of

A. phosphorus

B. nitrogen

C. calcium

D. carbon

Answer: 3



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81. Minerals are absorbed by the roots from the soil in the form of

- A. compounds
- B. very concentrated solution
- C. in the form of ions
- D. in the form of molecules.

Answer: 3



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82. A plant requires calcium for

- A. holding its cells together
- B. synthesizing chlorophyll
- C. photolysis of water
- D. opening and closing its stomata

Answer: 1



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83. K^+ ions control

- A. opening and closing of stomata
- B. guttation
- C. formation of mitotic spindle
- D. all of these

Answer: 1



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84. Sulphur is an important nutrient for optimum growth and productivity in

- A. (a) fibre crops
- B. (b) cereals
- C. (c) oil seed crops
- D. (d) pulse crops

Answer: 4



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85. A plant requires nitrogen and sulphur for its

- A. cell walls

B. storage vacuoles

C. enzymes

D. energy stores

Answer: 3



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86. A plant requires phosphorus for

A. (a) cell walls

B. (b) cell membranes

C. (c) enzymes

D. (d) starch deposits

Answer: 2



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87. A plant is showing symptoms like chlorosis of younger or older leaves, production of sterile flowers and grey spots. It may be due to the deficiency of

A. B

B. K

C. Mn

D. Ca

Answer: 3



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88. Elements required for ATP formation

A. N, Cu

B. K, P

C. N, P

D. P, Ca

Answer: 3



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89. Which of the following is a microelement ?

A. Chlorine

B. Hydrogen

C. Nitrogen

D. Oxygen

Answer: 1



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90. Phosphorus is present in :

A. Protein

B. DNA and RNA

C. Amino acid

D. starch

Answer: 2



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91. Elements useful in photosynthesis

A. Cu, Co, Fe

B. Cu, Mo, Zn

C. Cl, Mg, Mn

D. Mg, Fe, Co, Mn

Answer: 3



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92. Which of the following plant diseases is caused by mineral deficiency?

- A. Heart rot of beets
- B. White rust
- C. Red rot of sugarcane
- D. Wilt in cotton

Answer: 1



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93. Red pigment (Leghaemoglobin) having affinity for oxygen is present in the roots of

- A. Carrot
- B. Soybean
- C. Mustard

D. Radish

Answer: 2

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94. Copper is activator in enzyme

- A. (a) cytochrome oxidase
- B. (b) carbonic anhydrase
- C. (c) lactic dehydrogenase
- D. (d) tryptophanase

Answer: 1

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95. A macronutrient which is component of all organic compounds but is not obtained from soil is

(a) N

(b) P

(c) Mg

(d) C

A. (a) N

B. P

C. Mg

D. C

Answer: 4



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96. Which group of three micronutrient elements is required for both photosynthesis and mitochondrial electron transport ?

A. Cu, Mn, Fe

B. Co, Ni, Mo

C. Ca, K, Na

D. Mn, Co, Ca

Answer: 1



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97. Most abundant element found in plants is

A. (a) carbon

B. (b) nitrogen

C. (c) iron

D. (d) manganese

Answer: 1



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98. Farmers in a particular region were concerned that premature yellowing of leaves of a pulses crop might cause decrease in the yield. Which treatment could be most beneficial to obtain maximum seed yield?

A. Removal of all yellow leaves and spraying the remaining green leaves with 2, 4, 5-trichlorophenoxy acetic acid

- B. Application of iron and magnesium to promote synthesis of chlorophyll
- C. Frequent irrigation of the crop
- D. Treatment of the plants with cytokinins alongwith a small dose of nitrogenous fertilizer.

Answer: 2



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99. Prolonged liberal irrigation of agricultural fields is likely to create the problem of

- A. (a) acidity
- B. (b) aridity

C. (c) salinity

D. (d) metal toxicity

Answer: 3



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100. Which is essential for selective permeability of cell membrane.

A. Zn

B. Ca

C. Mo

D. S

Answer: 2



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101. Chlorosis in plants occurs due to

- A. high sunlight intensity
- B. carotenoid degeneration
- C. absorption of yellow pigments from the soil
- D. deficiency of Mg and Fe in the soil

Answer: 4



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102. Mg and Fe are needed for plants in the

A. energy transfer

B. synthesis of chlorophyll pigment in the leaves

C. stomatal opening

D. translocation of carbohydrates .

Answer: 2



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103. Match the column I with Column II.

Column I

Column II

A. Mg

1. found in some amino acids

B. S

2. structural component of chlorophyll

C. I

3. not important for plants

D. Mn

4. required for photolysis of water

A. A- 2, B- 1, C- 3, D- 4

B. A- 1, B- 2, C- 3, D- 4

C. A- 1, B- 3, C- 4, D- 2

D. A- 2, B- 3, C- 1, D- 4

Answer: 1



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104. What is the role fo molybdenum?

A. (a) Nitrogen fixation

B. (b) Flower induction

C. (c) Chromosome contraction

D. (d) Carbon assimilation

Answer: 1



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105. Plastocyanin contain

A. (a) Mo

B. (b) Mg

C. (c) Cu

D. (d) Zn

Answer: 3



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106. Osmolarity of cells is mainly due to

A. (a) K^+

B. (b) Mn^{++}

C. (c) Ca^{++}

D. (d) Cl^-

Answer: 1



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107. Copper deficiency leads to

A. exanthema

B. whiptail of cauliflower

C. little leaf condition

D. interveinal chlorosis

Answer: 1



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108. Gray spots of oat are caused by the deficiency of

A. Cu

B. Zn

C. Mn

D. Fe

Answer: 3



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109. Most minerals in a soil are in the

- A. sand
- B. clay
- C. silt
- D. air pockets

Answer: 2

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110. Small clay particles hold calcium, potassium and magnesium ions because surfaces of clay particles are

- A. smooth
- B. covered with tiny crevices
- C. negatively charged
- D. waxy

Answer: 3



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111. Most of the dry weight of a tree comes from atoms acquired from

- A. (a) soil
- B. (b) water
- C. (c) air

D. (d) decomposing leaves

Answer: 3



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112. A root concentrates minerals by

- A. active transport
- B. facilitated diffusion
- C. osmosis
- D. diffusion

Answer: 1



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113. As water and minerals move toward the vascular cylinder of a root, they must enter the cytoplasm of

- A. xylem vessels
- B. cortex cells
- C. endodermal cells
- D. pericycle cells

Answer: 3



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114. Most vascular plants increase the absorption of minerals by

A. mycorrhizae

B. convertible phloem

C. casparian channels along the phloem

D. companion cells

Answer: 1



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115. Uptake of mineral ions into xylem is controlled by

A. epidermal cells

B. cortex cells

C. endodermal cells

D. xylem cells

Answer: 3



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116. When a cell contains some nondiffusible or fixed ions which are kept balanced by diffusible ions of opposite charge, this condition is known as

- A. Donnan equilibrium
- B. Chemical equilibrium
- C. Saturation effect
- D. Ionic exchange

Answer: 1



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117. Point out the one which does not justify active absorption of minerals ?

- A. Cations and anions are often absorbed at different rates
- B. Absorption of different ions is highly selective
- C. absorption is accompanied by increase in the rate of respiration
- D. Absorption is the movement of substances from higher concentration to their lower concentration

Answer: 4



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118. Mineral nutrients absorbed by roots, move to leaves through

A. xylem

B. phloem

C. sieve tubes

D. none of these

Answer: 1



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119. Membrane pathways for minerals along permeases

A. need ATP

B. need carrier solute complex

C. need pinosomes

D. need diffusion gradient

Answer: 4



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120. Carrier proteins for active salt uptake

A. have pores

B. from complex with ions

C. function under transpiration pull

D. All of the above

Answer: 2



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121. The absent of minerals is

- A. equal to the rate of translocation of water
- B. dependent on transpiration pull
- C. through xylem vessel
- D. All of the above

Answer: 4



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122. Bidirection translocation of minerals takes place in

A. xylem

B. phloem

C. cambium

D. parenchyma

Answer: 2



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123. Passive absorption of minerals depends on

A. temperature

B. humidity

C. metabolic inhibitor

D. (1) and (3)

Answer: 1



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124. Passive absorption of mineral salts is not dependent on

A. osmosis

B. diffusion

C. Donnan equilibrium

D. ion exchange

Answer: 1



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125. Active uptake of minerals by roots mainly depends on the

- A. availability of oxygen
- B. light
- C. temperature
- D. availability of CO_2

Answer: 1

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126. Inorganic nutrients are presents in the soil in the form of

- A. molecules

B. atoms

C. electrically charged ions

D. parasites

Answer: 3



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127. Active transport of ions by the cells requires

A. high temperature

B. ATP

C. alkaline pH

D. salts

Answer: 2



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128. Theory suggesting that carbon dioxide in respiration helps in mineral absorption is called

- A. Carbonic acid exchange theory
- B. Contact exchange theory
- C. Active mineral absorption
- D. Donnan dquilibrium

Answer: 1



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129. Insectivorous/carnivorous plants live in medium that are deficient in nitrogen. Select a pair of insectivorous plants

- A. Drosera and Rafflesia
- B. Nepenthes and Utricularia
- C. Dionaea and Viscum
- D. Venus fly trap and Rafflesia.

Answer: 2



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130. Drosera catches insects by means of

- A. pitcher
- B. adhesive pads

C. bladder

D. tentacles secreting shining liquid

Answer: 4



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131. Cuscuta is an example of a

A. heteroparasite

B. holoparasite

C. root parasite

D. semiparasite

Answer: 2



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132. The example of a partial root parasite is

- A. Santalum
- B. Cuscuta
- C. Arceuthobium
- D. Viscum

Answer: 1

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133. Saprophytes belonging to angiosperms are known as

- A. humus plants

B. organic plants

C. facultative saprophytes

D. obligate saprophytes.

Answer: 1



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134. A heterotroph is an organism that derives its energy from

A. light

B. inorganic molecules

C. heat

D. organic molecules

Answer: 4



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135. The carnivorous plants live in water logged or boggy habitats which are

- A. deficient in nitrates
- B. deficient in sulphites
- C. deficient in oxygen
- D. deficient in many salts.

Answer: 1



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136. Which one of the following insectivorous plants is also known as Sundew plant ?

A. Nepenthes

B. Drosera

C. Utricularia

D. Dionaea

Answer: 2



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137. Match the following essential elements (List-I) with their respective roles (List-II) and select the correct answer using

the codes given below the lists

List-I	List-II
A. Chlorine	1. Constituent of plastocyanin
B. Copper	2. Constituent of nitrate reductase
C. Molybdenum	3. Constituent of alcohol dehydrogenase
D. Zinc	4. Required for O_2 evolution in photosynthesis
	5. Required for phosphate transfer

A. $A \ B \ C \ D$
4 1 3 2

B. $A \ B \ C \ D$
1 2 5 3

C. $A \ B \ C \ D$
1 4 5 2

D. $A \ B \ C \ D$
4 1 2 3

Answer: 4



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138. Which of the following components are associated with nitrate reductase activity?

1. Reduced pyridine nucleotide
2. Flavin adenine dinucleotide
3. Molybdenum
4. Boron

Select the correct answer using the codes given below

- A. 1, 2 and 3
- B. 1 and 2
- C. 2, 3 and 4
- D. 1, 3 and 4

Answer: 1

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139. Farmers have reported 50% higher yields of Rice by using biofertilizer

- A. Mycorrhiza
- B. Anabaena azollae
- C. Lichen
- D. Legume-rhizome symbiosis

Answer: 2

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140. Read the following statements regarding the mineral nutrition in plants

(1) For the elements that are actively mobilized within the plants, the deficiency symptoms tend to appear first in the young tissues.

(2) Manganese competes with iron and magnesium for uptake and with magnesium for binding with enzymes.

(3) Manganese inhibits calcium translocation in shoot apex.

(4) Rhodospirillum is aerobic free-living nitrogen fixing microbe.

Which of these are correct

A. (i), (iii) & (iv)

B. (ii) & (iv)

C. (ii) & (iii)

D. (ii), (iii) & (iv)

Answer: 3



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141. Read the following matches regarding the elements and their deficiency symptoms in plants

(i) Molybdenum - Brown heart of turnip

(ii) Potassium - Plastid disintegration

(iii) Magnesium - Underdeveloped phloem & pith

(iv) Phosphorus - Delay in seed germination

Which of these are correct

A. (i), (iii) & (iv)

B. (ii), (iii) & (iv)

C. (i), (ii) & (iii)

D. (iii) & (iv) only

Answer: 2



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142. Little leaf disease is caused by

A. Copper

B. Zinc

C. Manganese

D. Cobalt

Answer: 2



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143. Match the following

- | | |
|---------------|--|
| (i) Boron | (p) Water-splitting reaction in photosynthesis |
| (ii) Chlorine | (q) Synthesis of auxin |
| (iii) Zinc | (r) Redox reactions |
| (iv) Copper | (s) Uptake and utilization of Ca^{2+} |

A. (i)- (p), (ii)- (r), (iii)- (q), (iv)- (s)

B. (i)- (r), (ii)- (p), (iii)- (q), (iv)- (s)

C. (i)- (s), (ii)- (p), (iii)- (q), (iv)- (r)

D. (i)- (s), (ii)- (q), (iii)- (p), (iv)- (r)

Answer: 3



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144. Match the following

- | | |
|---------------|---|
| (i) Magnesium | (p) Activator of alcohol dehydrogenase |
| (ii) Zinc | (q) Component of ferredoxin and cytochromes |
| (iii) Iron | (r) Activator of Rubisco |
| (iv) Boron | (s) Pollen germination |

A. (i)- (r), (ii)- (p), (iii)- (s), (iv)- (q)

B. (i)- (s), (ii)- (p), (iii)- (q), (iv)- (r)

C. (i)- (r), (ii)- (q), (iii)- (p), (iv)- (s)

D. (i)- (r), (ii)- (p), (iii)- (q), (iv)- (s)

Answer: 4



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145. Match the following

- | | |
|----------------|--|
| (i) Calcium | (p) Constituent of ferredoxin, thiamine & biotin |
| (ii) Potassium | (q) Formation of mitotic spindle |
| (iii) Sulphur | (r) Splitting of water to liberate O_2 during photosynthesis |
| (iv) Manganese | (s) Maintenance of anion-cation balance |

A. (i)- (q), (ii)- (s), (iii)- (p), (iv)- (r)

B. (i)- (s), (ii)- (q), (iii)- (p), (iv)- (r)

C. (i)- (p), (ii)- (s), (iii)- (q), (iv)- (r)

D. (i)- (q), (ii)- (r), (iii)- (p), (iv)- (s)

Answer: 1



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146. Critical toxicity level caused by mineral nutrients means reduction in dry weight of plant tissue by

- A. 5 %
- B. 10 %
- C. 20 %
- D. 25 %

Answer: 2



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147. Match List - I (Element) with List - II (Process) and select the correct answer using the codes given below the lists

List-I	List-II
A. Molybdenum	1. Photosynthesis
B. Manganese	2. Respiration
C. Sulphur	3. Nitrate reduction
D. Calcium	4. Cell division
	5. Protein synthesis

A. *A B C D*
5 2 3 1

B. *A B C D*
3 1 5 4

C. *A B C D*
2 1 4 5

D. *A B C D*
3 2 4 5

Answer: 2



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148. Find out the correct options

1. Copper is present in cytochrome oxidase

2. Pantothenic acid is precursor of CoA

3. Thymine pyrophosphate is prosthetic group in decarboxylases

4. Zinc is present in RNA and DNA polymerases.

A. 1 and 2

B. 2, 3 and 4

C. 1, 2, 3 and 4

D. 1, 3 and 4

Answer: 1



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149. Regarding the mineral nutrition of plants, which one of the following statements is correct?

- A. The availability of iron to plants decreases with the increase of acidity of the soil
- B. Molybdenum is a constituent of nitrate reductase system
- C. Sulphur is a constituent of phenylalanine
- D. All of the above

Answer: 2



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150. Consider the following enzymes

1. Glutamate dehydrogenase
2. Glutamine synthetase

3. Glutamate synthase

Which of these are concerned with ammonia assimilation?

- A. 1 and 2
- B. 2 and 3
- C. 1 and 3
- D. 1, 2 and 3

Answer: 4



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151. Which one of the following pairs is not correctly matched?

- A. Copper Plastocyanin

B. Sulphur Serine

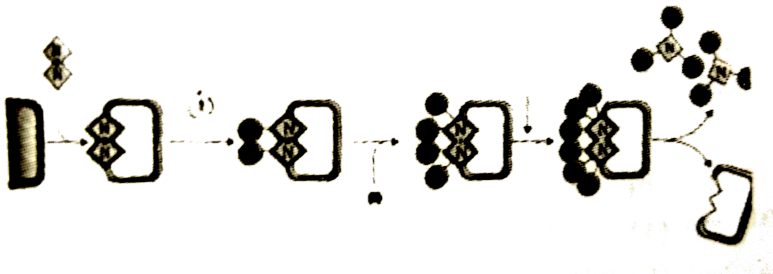
C. Molybdenum Nitrate reductase

D. Zinc Alcohol dehydrogenase

Answer: 2

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152. After going through the diagram choose the correct option



Name of the	Enzyme used	(i)	(ii)
-------------	-------------	-----	------

A. Process

Trans-amination	Transaminase	Oxidation	Glutamate
-----------------	--------------	-----------	-----------

B. nitrogen fixation, nitrogenase, dehydrogenation, 2H

C. reductive deamination, dehydrogenase, reduction, NH₃

D. nitrogen fixation, nitrogenase, reduction, 2H

Answer: 4



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153. Go through the following matches

(i) Calcium - Required by meristematic and differentiating tissues

(ii) Nitrogen - Mineral element required by plants in the greatest amount.

(iii) Magnesium - Activates enzymes involved in DNA and RNA synthesis.

(iv) Iron - Mainly obtained by plants in ferrous form

Which of these are correct

A. (i), (ii) and (iii)

B. (ii) and (iii)

C. (i), (iii) & (iv)

D. All are correct

Answer: 1



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154. Read the following matches

(i) Zinc - Activator of catalase

(ii) Calcium - Required during formation of mitotic spindle

(iii) Sulphur - Constituent of ferredoxin

(iv) Chlorine - Essential for water- splitting reaction in photosynthesis

Which of these are correct

A. (i), (ii) & (iii)

B. (ii), (iii) & (iv)

C. (iii) & (iv)

D. (i) & (ii)

Answer: 2



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155. Go through the following matches

(i) Copper - Absorbed as cuprous ions

(ii) Molybdenum - Component of nitrate reductase

(iii) Chlorine - Needed in synthesis of auxin

(iv) Boron - Required for uptake and utilization of Ca^{2+}

Which of these are correct:

A. (i), (ii) & (iii)

B. (ii), (iii) & (iv)

C. (ii) & (iv)

D. All are correct

Answer: 3



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156. Read the following matches

(i) Boron - Pollen germination

(ii) Manganese - Splitting of water during photosynthesis

(iii) Zinc - Activates carboxylases

(iv) Copper - Involved in redox reactions

Which of these are correct

A. (i), (ii) & (iii)

B. (ii), (iii) & (iv)

C. (i), (iii) & (iv)

D. All are correct

Answer: 4



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157. Read the following statement regarding the mineral

(i) Both *Rhizobium* and *Frankia* are free living in soil, but as symbionts, can fix atmospheric nitrogen.

(ii) Ammonia synthesis by nitrogenase requires 16 ATP for each ammonia produced.

(iii) While most of plants can assimilate nitrate as well as ammonium ions, the latter is quite toxic to plants and hence cannot accumulate in them.

(iv) Along with the transpiration stream, the nodules of some plants export the fixed nitrogen as urides.

Which of these are correct

A. (i), (iii) & (iv)

B. (ii), (iii) & (iv)

C. (iii) & (iv)

D. All are correct

Answer: 1



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158. Go through the following matches with reference to the elements and their deficiency symptoms in plants:

- (i) Sulphur - Reduced nodulation in legumes
- (ii) Boron - Whiptail disease
- (iii) Sulphur - Blossom end rot of tomato
- (iv) Nitrogen - Wrinkling of cereal grains

Which of these are correct

- A. (i), (ii) & (iii)
- B. (i) & (iii)
- C. (ii), (iii) & (iv)

D. (i) & (iv)

Answer: 4

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159. With reference to mineral nutrition in plants, which one of the following pair is not correctly matched?

A. Molybdenum - Required for nitrogen fixation and nitrate reduction

B. Manganese - Required for integrity of chloroplast membrane and for oxygen release in photosynthesis

C. Iron - Required for development of chlorophyll and its pigments.

D. Magnesium - involved in osmosis and ionic balance, and in opening and closing of stomata.

Answer: 4



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160. Yield of rice is increased by

- A. Azotobacter
- B. Anabaena
- C. Cyndrospermum
- D. Clostridium

Answer: 2



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161. By the reaction of α -ketoglutaric acid with ammonia, through which of the process glutmaic acid is formed

- A. oxidative amination
- B. reductive amination
- C. ammonification
- D. transamination

Answer: 2



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162. Which of the following is must for chlorophyll synthesis

A. Fe

B. Mg

C. K

D. Mn

Answer: 2



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

A. chlorosis

B. etiolation

C. shortening of internodes

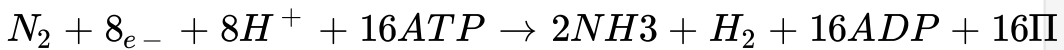
D. necrosis

Answer: 2



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164.



The above equation refers to

- A. (a) ammonification
- B. (b) nitrification
- C. (c) nitrogen fixation
- D. (d) denitrification

Answer: 3



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165. Which element is essential as electron carrier?

- A. Potassium
- B. Iron
- C. Zinc
- D. Calcium

Answer: 2



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166. Which of the following is a mobile mineral element in the plants?

A. Ca

B. Mo

C. Fe

D. Cu

Answer: 2



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167. Which of the following micronutrients is essential for activation of urease, the enzyme involved in nitrogen metabolism ?

A. Boron

B. Molybdenum

C. Zinc

D. Nickel

Answer: 4



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168. In nitrification, ammonia is first oxidised to nitrite by

A. (a) Nitrosomonas and Nitrococcus

B. (b) Nitrosomonas and Nitrobactor

C. (c) Pseudomonas and Nitrococcus

D. (d) Pseudomonas and Thiobacillus

Answer: 1



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169. Leguminous plants are able to fix atmospheric nitrogen through the process of symbiotic nitrogen fixation. Which one of the following statements is not correct for this process of nitrogen fixation ?

- A. (a) Leghaemoglobin scavenges oxygen and is pinkish in colour
- B. (b) Nodules act as sites for nitrogen fixation
- C. (c) The enzyme nitrogenase catalyses the conversion of atmospheric N_2 to NH_3
- D. (d) Nitrogenase is insensitive to oxygen

Answer: 4



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170. Which one of the following is not a micronutrient

- A. Boron
- B. Molybdenum
- C. Magnesium
- D. Zinc

Answer: 3

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171. An element playing important role in nitrogen fixation is

- A. Zinc

B. Molybdenum

C. Copper

D. Manganese

Answer: 2



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172. One of the free-living, anaerobic nitrogenfixer is

A. Azotobacter

B. Beijernickia

C. Rhodospirillum

D. Rhizobium

Answer: 3



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173. Which one of the following is not an essential mineral element for plants while the remaining three are

- A. Iron
- B. Manganese
- C. Cadmium
- D. Phosphorus

Answer: 3



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174. An organism used as a biofertilizer for raising soyabean crop is:-

- A. (a) Azotobacter
- B. (b) Azospirillum
- C. (c) Rhizobium
- D. (d) Nostoc

Answer: 3



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175. Nitrifying bacteria:-

- A. Oxidize ammonia to nitrates
- B. Convert free nitrogen to nitrogen compounds

C. Convert proteins into ammonia

D. Reduce nitrates to free nitrogen

Answer: 1



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176. The function of leghaemoglobin in the root nodules of legumes is:-

A. Inhibition of nitrogenase activity

B. Oxygen removal

C. Nodule differentiation

D. Expression of nif gene

Answer: 2



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177. Hydroponics is the method of

- A. water conservation
- B. plant development in water without soil
- C. plant development without soil
- D. plant development in saline soil

Answer: 2



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178. Which one of the following elements (miconutrients) in plants is not remobilised ?

A. Phosphorus

B. Calcium

C. Potassium

D. Sulphur

Answer: 2



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179. Which one of the following is not an essential mineral element for plants while the remaining three are

A. Iron

B. Manganese

C. Cadmium

D. Phosphorus

Answer: 3



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180. Cuscuta is an example of

- A. (a) Predation
- B. (b) Endoparasitism
- C. (c) Ectoparasitism
- D. (d) Brood parasitism

Answer: 3



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181. For its action, nitrogenase requires

- A. Mn^{2+}
- B. Super oxygen radicals
- C. High input of energy
- D. Light

Answer: 3



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182. Which one of the following is wrong statement ?

- A. Root nodule forming nitrogen fixers live as aerobes under free-living conditions

B. Phosphorus is a constituent of cell membranes, certain nucleic acids and all proteins

C. Nitrosomonas and Nitrobacter are chemoautotrophs

D. Anabaena and Nostoc are capable of fixing nitrogen in free-living state also

Answer: 2



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183. A nitrogen fixing microbe associated with Azolla in rice-fields is:-

A. Anabaena

B. Frankia

C. Tolypothrix

D. Spirulina

Answer: 1



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184. Best defined function of manganese in green plants is

A. Calvin cycle

B. Nitrogen fixation

C. Water absorption

D. Photolysis of water

Answer: 4



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185. The first stable product of fixation of atmospheric nitrogen in leguminous plants is



B. Glutamate



D. Ammonia

Answer: 4



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

A. Buds

B. Senescent leaves

C. Young leaves

D. Roots

Answer: 2



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187. Which one gives the most valid and recent explanation for stomatal movement?

A. Potassium influx and efflux

B. Starch hydrolysis

C. Guard cell photosynthesis

D. Transpiration

Answer: 1



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188. During biological nitrogen fixation, inactivation of nitrogenase by oxygen poisoning is prevented by

A. leghaemoglobin

B. xanthophyll

C. carotene

D. cytochrome

Answer: 1



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189. In which of the following, all the three are macronutrients

- A. Iron, copper, molybdenum
- B. Molybdenum, magnesium, manganese
- C. Nitrogen, nickel, phosphorus
- D. Boron, zinc, manganese

Answer: none



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190. Which is essential for the growth of root tip ?

- A. Zn

B. Fe

C. Ca

D. Mn

Answer: 3



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191. Select the mismatch

A. Frankia - Alnus

B. Rhodospirillum - Mycorrhiza

C. Anabaena - Nitrogen fixer

D. Rhizobium - Alfalfa

Answer: 2



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192. In which of the following forms is iron absorbed by plants

- A. Both ferric and ferrous
- B. Free element
- C. Ferrous
- D. Ferric

Answer: 4



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193. Which of the following elements is responsible for maintaining turgor in cells

A. Calcium

B. Potassium

C. Sodium

D. Magnesium

Answer: 2



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194. Photosynthetic nutrition in plants is also known as

A. holophytic nutrition

- B. chemotrophic nutrition
- C. heterotrophic nutrition
- D. heteroholophytic nutrition

Answer: 1



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195. An essential element is that which

- A. (a) is found in plant ash
- B. (b) is available in soil
- C. (c) improves health of plants
- D. (d) is irreplaceable for growth of plants

Answer: 4



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196. Plants require minor elements in small quantities, their major role is to act as

- A. (a) regulation of cell division of meristematic sites
- B. (b) co-factors of enzymes
- C. (c) building blocks of important amino acids
- D. (d) precursors of plant hormones

Answer: 2



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197. Micronutrients are

- A. less important than macronutrients
- B. as important as macronutrients
- C. having no role in plant nutrition
- D. omitted from culture medium without any detrimental effect.

Answer: 2



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198. Importance of microelements was recognised late due to

- A. their toxicity

- B. presence as contaminants in macronutrients
- C. negligible role played by them in plant physiology
- D. leakage from roots.

Answer: 2



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199. An essential element derived from soil only is called

- A. micronutrient
- B. macronutrient
- C. mineral element
- D. macroelement

Answer: 3



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200. The criteria for the essentiality of a mineral element were given by

- A. Arnon and Stout
- B. Hoagland
- C. Hopkins
- D. Sachs and Liebig

Answer: 1



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201. Carl Maze (1915) divided mineral elements into two categories on the basis of

- A. quantity in which these are required
- B. quality and action
- C. toxicity they cause
- D. path they travelled in plant.

Answer: 1



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202. Choose the correct one.

- A. C, H, O are called frame work elements
- B. Ca^{2+} , Mg^{2+} , K^{+} are protoplasmic elements

C. C, H, O, N are balancing elements

D. All of the above

Answer: 1



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203. Essential micronutrients are also known as

A. tracer elements

B. trace elements

C. radioisotopes

D. frame work elements

Answer: 2



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204. Zinc is a

- A. tracer element
- B. trace element
- C. macronutrient
- D. monomineral nutrient

Answer: 2

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205. Microelements are those essential elements which are required by the plants in concentration

- A. (a) less than 10m mole/kg of dry matter.
- B. (b) less than 1m mole/kg of dry matter.
- C. (c) more than 1 microgram/ of dry matter.
- D. (d) equal to 20 μ g/ of dry matter

Answer: 1



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206. The concentration of a macroelement per gm of dry matter in plants is at least

- A. (a) 1000 μ g/gm of dry matter
- B. (b) 100 μ g/gm of dry matter
- C. (c) 50 μ g/gm of dry matter

D. (d) $995 \mu\text{g}/\text{gm}$ of dry matter.

Answer: 1



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207. What is an essential element ?

- A. An element present in the soil.
- B. An element present in the plant.
- C. An element that improves growth of plant.
- D. An element without which a plant will not grow and complete its life cycle.

Answer: 4



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208. the ion which is commonly found free in the cell is

A. potassium

B. borate

C. sulphur

D. nitrogen

Answer: 1



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209. The major portion of the dry weight of plants comprised of

A. N, P, K

B. Ca, Mg, S

C. C, N, H

D. C, H, O

Answer: 4



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210. It is possible to determine whether an element is essential by observing growth of plants

A. in soil form which the particular element is removed

B. in soil in which only the particular element is present

C. in a inert medium to which solution of only the particular element is added

D. in an inert medium to which a nutrient solution excluding that particular element is added

Answer: 4



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211. Most abundant elements in the living cells are

A. C, O, N and P

B. C, H, O and Ca

C. C, H, O and N

D. C, H, Mg and N

Answer: 3



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212. Which one is an essential mineral, not constituent of any enzyme but stimulates the activity of many enzymes?

A. Na

B. B

C. K

D. C

Answer: 3



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213. A trace element, also required for plant growth, and in the form of radio active isotope useful in cancer therapy is

- A. iron
- B. calcium
- C. cobalt
- D. sodium

Answer: 3



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214. Choose the correct statement.

- A. (a) Solution culture (hydroponics) contains all essential elements except one, the usefulness of which is to be

determined

B. (b) In Aeroponics roots are dipped in solution culture

rich in air

C. (c) Potometer is used to measure degree of opening of

stomata

D. (d) All of the above

Answer: 1



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215. The agent that keeps metals in the soluble state is called

A. chelating agent

B. balancing agent

C. buffer agent

D. catalytic agent.

Answer: 1



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216. The most crucial event in nature governing nutrient balance is

A. (a) primary production

B. (b) secondary production

C. (c) nutrient cycling

D. (d) gross production

Answer: 3



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217. Which has both Fe and Cu as prosthetic group?

- A. Haemoglobin
- B. Dehydrogenase
- C. Polymerase
- D. Cytochrome oxidase

Answer: 4



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218. Which of the following is a component of coenzyme A, vitamin biotin, thiamine and mustard oil and whose deficiency results in decrease in nodule formation is

A. Cu

B. Ca

C. S

D. Mn

Answer: 3



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219. The deficiency of boron results in all except

- A. top sickness
- B. browning of head in cauliflower
- C. internal cork of apple
- D. marsh spot disease

Answer: 4



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220. In green plants, Boron assists

- A. in activation of enzymes
- B. in nitrogen fixation
- C. in photosynthesis
- D. in sugar transport

Answer: 4



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221. Match the correct deficiency symptoms.

A. (a) Cu - exanthema

B. (b) Mg - interveinal chlorosis and upward curling of
leaves

C. (c) Zn - malformation of leaves and fruits

D. (d) All of the above

Answer: 4



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222. Which of the following is non-symbiotic ?

A. Azotobacter

B. Nostoc

C. Rhizobium

D. Frankia

Answer: 1



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223. The most important function of Rhizobium is

A. nitrogen assimilation

B. nitrogen fixation

C. ammonification

D. nitrification

Answer: 2



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224. Which of the following gene clusters in bacteria is responsible for nitrogen fixation ?

A. (a) Nod, Nif, Fix

B. (b) Nod, Ndf, Nfx

C. (c) nod, Nix, Nfx

D. (d) Ndx, Nif, Fix

Answer: 1



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225. N_2 fixation is

- A. (a) $N_2 \rightarrow NH_3$
- B. (b) $NO_3 \rightarrow NO_2$
- C. (c) $N_2 \rightarrow$ amino acid
- D. (d) both (a) and (b)

Answer: 1



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226. The process of N_2 fixation in root nodules is controlled by

A. nif

B. NAA

C. IAA

D. ABA

Answer: 1



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227. Enzyme involved in nitrogen assimilation

A. nitrogenase

B. nitrate reductase

C. transferase

D. transaminase

Answer: 2



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228. Nitrate reductase forms



Answer: 3



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229. If by radiation all nitrogenase enzymes are inactivated then there will be no

- A. fixation of atmospheric nitrogen
- B. conversion from nitrate to nitrite in legumes
- C. conversion from ammonium to nitrate in soil
- D. fixation of nitrogen in legumes

Answer: 4



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230. Plants that have mutualistic relations with nitrogen-fixing bacteria receive from the bacteria

A. ammonium

B. amino acids

C. nitrate

D. nitrite

Answer: 1



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231. Plants that have mutualistic relations with nitrogen-fixing bacteria provide the bacteria with

A. N_2

B. enzymes

C. sugars

D. nitrite

Answer: 3



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232. Nitrosomonas and Nitrosococcus promote

- A. reduction of ammonia
- B. oxidation of nitrite
- C. reduction of nitrate
- D. oxidation of ammonia

Answer: 4



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233. The Nitrobacter and Nitrocystis

- A. (a) oxidise nitrite to nitrate
- B. (b) oxidise nitrate
- C. (c) reduce nitrite
- D. (d) reduce nitrate

Answer: 1



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234. Reduction is the term used when conversion of takes place

- A. (a) nitrate to nitrite

B. (b) nitrite to nitrate

C. (c) ammonia to nitrogen

D. (d) All of the above

Answer: 1



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235. Certain bacteria living in the soil poor in oxygen convert nitrates into nitrites and then to free nitrogen and such bacteria are termed as

A. nitrogen fixing bacteria

B. denitrifying bacteria

C. ammonifying bacteria

D. saprophytic bacteria.

Answer: 2



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236. Bacteria which break down the dead organisms of the soil into nitrogen compounds are termed

- A. denitrifying bacteria
- B. nitrifying and ammonifying bacteria
- C. nitrogen fixing bacteria
- D. parasitic bacteria.

Answer: 2



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237. The nodules in a plant root where nitrogen fixing bacteria live form from cells of the

- A. epidermis
- B. cortex
- C. endodermis
- D. vascular tissue

Answer: 2



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238. The source of energy for non-biological nitrogen fixation is

- A. by ionizing events such as lightning and effect of cosmic rays
- B. ferredoxin enzyme and nitrogenase
- C. by reduction of proteins to ammonia
- D. by oxidation of ammonia to protein

Answer: 1



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239. *Vicia faba* and *pisum sativum* are recommended for rotation of crops because they

- A. require small amount of water
- B. are cash crops

C. help in nitrogen fixation of soil

D. kill all the harmful insects.

Answer: 3



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240. Nitrogen fixing enzyme in root nodule is

A. nitrase

B. nitrogenase

C. nitrosomonas

D. nitrogen esterase

Answer: 2



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241. Which of the following is an incorrect match ?

- A. Free living nitrogen fixing bacteria - Azotobacter
- B. Symbiotic nitrogen fixing cyanobacteria - Anabaena
- C. Symbiotic nitrogen fixing cyanobacteria - Frankia
- D. Symbiotic nitrogen fixing bacteria - Xanthomonas

Answer: 3

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242. Which of the following can use elemental nitrogen as their nitrogen source

- A. anabaena
- B. Nitrobacter
- C. Nitrosomonas
- D. All of the above

Answer: 1



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243. Nitrogen fixation by organism requires conditions that are

- A. highly alkaline
- B. anaerobic
- C. saturated with sunlight

D. free of water

Answer: 2



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244. Nodule formation is reduced in legume roots due to the deficiency of

A. chlorine

B. boron

C. sulphur

D. (2) and (3)

Answer: 4



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245. On earth the largest reservoir of nitrogen is

- A. the oceans
- B. granite rocks
- C. the air
- D. the soil

Answer: 3



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246. Organisms that fix nitrogen in aquatic habitats are

- A. green algae

B. cyanobacteria

C. brown algae

D. protozoa

Answer: 2



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247. In root nodules of leguminous plants, the pigment leghaemoglobin that gives pink colour to the nodules, is present in the

A. intercellular spaces

B. cytosol of bacteroids

C. inside the bacterial wall

D. outside the peribacterial space in the cytosol of nodule cells.

Answer: 4



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248. Besides providing pink colour to the root nodules, leghaemoglobin performs the function of

- A. protecting enzyme nitrogenase from free oxygen
- B. transporting nitrogen to host cells
- C. protecting bacteroids from the enzymes of host cell
- D. protecting leakage of fixed nitrogen to the soil atmosphere

Answer: 1



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249. Major nitrogen fixation is carried out by

- A. lightning
- B. chemical industries
- C. symbiotic bacteria
- D. leaching

Answer: 3



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250. Which one plays an important role in energy metabolism?

A. Calcium

B. Sodium

C. Sulphur

D. Phosphorus

Answer: 4



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251. Most of the plants obtain nitrogen from the soil in the form of

- A. nitrites and molecular nitrogen
- B. nitrates and ammonium salts
- C. nitrites and ammonium salts
- D. hyponitrites and nitrates

Answer: 2



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252. Deficiency of nitrogen produces

- A. blossom end rot of tomato
- B. Chlorosis
- C. die back disease
- D. reduced respiration

Answer: 2



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253. Plants absorb sulphur in the form of

- A. SO_2 from soil
- B. SO_2 from air
- C. both (1) and (2)
- D. SO_3 from soil

Answer: 2



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254. Which of the following is an micronutrient ?

A. Mg

B. Zn

C. Ca

D. P

Answer: 2



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255. Which of the following is not an essential micronutrient ?

A. Boron

B. Sodium

C. Manganese

D. Molybdenum

Answer: 2



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256. Which one of the following elements is not required by plants for their healthy normal growth?

A. Calcium

B. Magnesium

C. Lead

D. Iron

Answer: 3



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257. Carbon becomes available to crop plants in the form of

- A. amino acids
- B. carbonates
- C. carbon dioxide
- D. element carbon

Answer: 3



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258. On the basis of symptoms of chlorosis in leaves, a student inferred that this was due to deficiency of nitrogen.

This inference could be correct only if we assume that yellowing of leaves appeared first in

- A. old leaves
- B. young leaves
- C. mature leaves followed by young leaves
- D. young leaves followed by mature leaves

Answer: 1



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259. Fertilizers are usually enriched in NPK which denotes

- A. iron, manganese and zinc
- B. nitrogen, phosphorus and zinc

C. calcium and boron

D. nitrogen, phosphorus and potassium

Answer: 4



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260. Which one is component of ferredoxin ?

A. Zn

B. Mn

C. Cu

D. Fe

Answer: 4



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261. Potassium is involved in

- A. photosynthesis
- B. promoting many enzymatic activities that regulate plant processes
- C. providing reddish pigmentation to fruits
- D. formation of vascular cambium

Answer: 2

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262. The deficiency symptom of phosphorus is

- A. lodging of cereals
- B. leaf curl
- C. stunted growth
- D. wrinkling of grains

Answer: 3



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263. Due to deficiency of phosphorus

- A. the rate of protein synthesis is increased
- B. the rate of protein synthesis is decreased
- C. there is no effect on the rate of protein synthesis

D. the rate of protein synthesis initially declines but increases later on

Answer: 2



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

- A. bending of leaf tips
- B. formation of anthocyanin
- C. poor development of vasculature
- D. chlorosis

Answer: 4



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265. Pungent principle, a sinigrin, of crucifers is a

- A. (a) glycoside having sulphur
- B. (b) glycoside having cyanide
- C. (c) having special amino acids
- D. (d) tannin

Answer: 1



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266. A sulphur containing amino acid is

A. methionine

B. asparagine

C. serine

D. proline

Answer: 1



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267. Calcium is mainly a component of

A. primary walls

B. secondary wall

C. chlorophyll

D. middle lamella

Answer: 4



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268. White-bud condition in maize is produced due to the deficiency of

- A. (a) iron
- B. (b) molybdenum
- C. (c) zinc
- D. (d) boron

Answer: 3



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269. Deficiency of molybdenum causes

- A. poor development of vasculature
- B. bending of leaf tip
- C. brown heart of turnip
- D. mottling & marginal necrosis of leaves

Answer: 4



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270. In crucifers, whiptail disease is caused due to the deficiency of

- A. manganese
- B. Magnesium

C. molybdenum

D. iron

Answer: 3



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271. Which of the following microelements is related to the synthesis of plant auxin (IAA) ?

A. Molybdenum

B. Chlorine

C. Zinc

D. Boron

Answer: 3



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272. Reclamation disease of cereals and legumes is caused by the deficiency of

- A. manganese
- B. phosphorus
- C. copper
- D. boron

Answer: 3



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273. Death of stem and root tips occurs due to the deficiency of

A. phosphorus

B. nitrogen

C. calcium

D. carbon

Answer: 3



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274. Minerals are absorbed by the roots from the soil in the form of

- A. compounds
- B. very concentrated solution
- C. in the form of ions
- D. in the form of molecules.

Answer: 3



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275. A plant requires calcium for

- A. holding its cells together
- B. synthesizing chlorophyll
- C. photolysis of water
- D. opening and closing its stomata

Answer: 1



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276. K^+ ions control

- A. opening and closing of stomata
- B. guttation
- C. formation of mitotic spindle
- D. all of these

Answer: 1



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277. Sulphur is an important nutrient for optimum growth and productivity in

- A. fibre crops
- B. cereals
- C. oil seed crops
- D. pulse crops

Answer: 4



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278. Plants require sulphur for

- A. DNA replication

B. Protein synthesis

C. Glucose synthesis

D. ATP formation

Answer: 2



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279. A plant requires nitrogen and sulphur for its

A. cell walls

B. storage vacuoles

C. enzymes

D. energy stores

Answer: 3



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280. A plant requires phosphorus for

- A. cell walls
- B. cell membranes
- C. enzymes
- D. starch deposits

Answer: 2



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281. A plant is showing symptoms like chlorosis of younger or older leaves, production of sterile flowers and grey spots. It may be due to the deficiency of

A. B

B. K

C. Mn

D. Ca

Answer: 3



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282. Elements required for ATP formation

A. N, Cu

B. K, P

C. N, P

D. P, Ca

Answer: 3



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283. Which of the following is a microelement ?

A. Chlorine

B. Hydrogen

C. Nitrogen

D. Oxygen

Answer: 1



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284. Phosphorus is always present in

- A. Protein
- B. DNA and RNA
- C. Amino acid
- D. starch

Answer: 2



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285. Elements useful in photosynthesis

A. (a) Cu, Co, Fe

B. (b) Cu, Mo, Zn

C. (c) Cl, Mg, Mn

D. (d) Mg, Fe, Co, Mn

Answer: 3



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286. Which of the following plant diseases is caused by mineral deficiency?

A. Heart rot of beets

B. White rust

C. Red rot of sugarcane

D. Wilt in cotton

Answer: 1



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287. Root of which plant contains a red pigment that has affinity for oxygen ?

A. Carrot

B. Soybean

C. Mustard

D. Radish

Answer: 2



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288. Copper is activator in enzyme

- A. cytochrome oxidase
- B. carbonic anhydrase
- C. lactic dehydrogenase
- D. tryptophanase

Answer: 1



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289. A macronutrient which is component of all organic compounds but is not obtained from soil is

A. N

B. P

C. Mg

D. C

Answer: 4



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290. Which group of three micronutrient elements is required for both photosynthesis and mitochondrial electron transport ?

A. Cu, Mn, Fe

B. Co, Ni, Mo

C. Ca, K, Na

D. Mn, Co, Ca

Answer: 1



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291. Most abundant element found in plants is

A. carbon

B. nitrogen

C. iron

D. manganese

Answer: 1



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292. Farmers in a particular region were concerned that premature yellowing of leaves of a pulse crop might cause a decrease in the yield. Which treatment could be most beneficial to obtain maximum seed yield?

- A. Removal of all yellow leaves and spraying the remaining green leaves with 2, 4, 5-trichlorophenoxy acetic acid
- B. Application of iron and magnesium to promote synthesis of chlorophyll
- C. Frequent irrigation of the crop

D. Treatment of the plants with cytokinins alongwith a small dose of nitrogenous fertilizer.

Answer: 2



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293. Prolonged liberal irrigation of agricultural fields is likely to create the problem of

A. acidity

B. aridity

C. salinity

D. metal toxicity

Answer: 3



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294. Which is essential for selective permeability of cell membrane.

A. Zn

B. Ca

C. Mo

D. S

Answer: 2



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295. Chlorosis in plants occurs due to

- A. high sunlight intensity
- B. carotenoid degeneration
- C. absorption of yellow pigments form the soil
- D. deficiency of Mg and Fe in the soil

Answer: 4



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296. Mg and Fe are needed for plants in the

- A. (a) energy transfer
- B. (b) synthesis of chlorophyll pigment in the leaves
- C. (c) stomatal opening
- D. (d) translocation of carbohydrates .

Answer: 2



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297. Match the column I with Column II.

Column I

Column II

- | | |
|-------|--|
| A. Mg | 1. found in some amino acids |
| B. S | 2. structural component of chlorophyll |
| C. I | 3. not important for plants |
| D. Mn | 4. required for photolysis of water |

A. (a) A- 2, B- 1, C- 3, D- 4

B. (b) A- 1, B- 2, C- 3, D- 4

C. (c) A- 1, B- 3, C- 4, D- 2

D. (d) A- 2, B- 3, C- 1, D- 4

Answer: 1



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298. What is the role fo molybdenum?

- A. Nitrogen fixation
- B. Flower induction
- C. Chromosome contraction
- D. Carbon assimilation

Answer: 1



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299. Plastocyanin contains

A. Mo

B. Mg

C. Cu

D. Zn

Answer: 3



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300. Osmolarity of cells is mainly due to

A. K^+

B. Mn^{++}

C. Ca^{++}

D. Cl^{-}

Answer: 1



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301. Copper deficiency leads to

A. exanthema

B. whiptail of cauliflower

C. little leaf condition

D. interveinal chlorosis

Answer: 1



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302. Gray spots of oat are caused due to deficiency of

A. Cu

B. Zn

C. Mn

D. Fe

Answer: 3



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303. Most minerals in a soil are in the

A. sand

B. clay

C. silt

D. air pockets

Answer: 2



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304. Small clay particles hold calcium, potassium and magnesium ions because surfaces of clay particles are

A. smooth

B. covered with tiny crevices

C. negatively charged

D. waxy

Answer: 3



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305. Most of the dry weight of a tree comes from atoms acquired from

- A. soil
- B. water
- C. air
- D. decomposing leaves

Answer: 3



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306. A root concentrates minerals by

- A. active transport
- B. facilitated diffusion
- C. osmosis
- D. diffusion

Answer: 1



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307. As water and minerals move toward the vascular cylinder of a root, they must enter the cytoplasm of

- A. xylem vessels
- B. cortex cells

C. endodermal cells

D. pericycle cells

Answer: 3



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308. Most vascular plants increase the absorption of minerals by

A. mycorrhizae

B. convertible phloem

C. casparian channels along the phloem

D. companion cells

Answer: 1



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309. Uptake of mineral ions into xylem is controlled by

- A. epidermal cells
- B. cortex cells
- C. endodermal cells
- D. xylem cells

Answer: 3



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310. When a cell contains some nondiffusible or fixed ions which are kept balanced by diffusible ions of opposite charge

, this condition is known as

- A. Donnan equilibrium
- B. Chemical equilibrium
- C. Saturation effect
- D. Ionic exchange

Answer: 1



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311. Point out the one which does not justify active absorption of minerals ?

- A. Cations and anions are often absorbed at different rates

B. Absorption of different ions is highly selective

C. absorption is accompanied by increase in the rate of respiration

D. Absorption is the movement of substances from higher concentration to their lower concentration

Answer: 4



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312. Minerals absorbed by roots move to the leaf through

A. (a) xylem

B. (b) phloem

C. (c) sieve tubes

D. (d) none of these

Answer: 1



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313. Membrane pathways for minerals along permeases

A. need ATP

B. need carrier solute complex

C. need pinosomes

D. need diffusion gradient

Answer: 4



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314. Carrier proteins for active salt uptake

- A. have pores
- B. form complex with ions
- C. function under transpiration pull
- D. All of the above

Answer: 2



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315. The ascent of minerals is

- A. equal to the rate of translocation of water
- B. dependent on transpiration pull

C. through xylem vessel

D. All of the above

Answer: 4



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316. Bidirection translocation of minerals takes place in

A. xylem

B. phloem

C. cambium

D. parenchyma

Answer: 2



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317. Passive absorption of minerals depends on

- A. temperature
- B. humidity
- C. metabolic inhibitor
- D. (1) and (3)

Answer: 1

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318. Passive absorption of minerals salts is not dependent on

- A. osmosis

B. diffusion

C. Donnan equilibrium

D. ion exchange

Answer: 1



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319. Active uptake of minerals by roots mainly depends on

A. availability of oxygen

B. light

C. temperature

D. availability of CO_2

Answer: 1



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

- A. molecules
- B. atoms
- C. electrically charged ions
- D. parasites

Answer: 3



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321. Active transport of ions by the cell requires

A. high temperature

B. ATP

C. alkaline pH

D. salts

Answer: 2



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322. Theory suggesting that carbon dioxide in respiration helps in mineral absorption is called

A. Carbonic acid exchange theory

- B. Contact exchange theory
- C. Active mineral absorption
- D. Donnan equilibrium

Answer: 1



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323. Insectivorous/carnivorous plants live in medium that are deficient in nitrogen. Select a pair of insectivorous plants

- A. Drosera and Rafflesia
- B. Nepenthes and Utricularia
- C. Dionaea and Viscum
- D. Venus fly trap and Rafflesia.

Answer: 2



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324. Drosera catches insects by

- A. (a) pitcher
- B. (b) adhesive pads
- C. (c) bladder
- D. (d) tentacles secreting shining liquid

Answer: 4



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325. Cuscuta is an example of a

- A. (a) heteroparasite
- B. (b) holoparasite
- C. (c) root parasite
- D. (d) semiparasite

Answer: 2



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326. The example of a partial root parasite is

- A. Santalum
- B. Cuscuta

C. Arceuthobium

D. Viscum

Answer: 1



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327. Saprophytes belonging to angiosperms are known as

A. humus plants

B. organic plants

C. facultative saprophytes

D. obligate saprophytes.

Answer: 1



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328. A heterotroph is an organism that derives its energy from

- A. light
- B. inorganic molecules
- C. heat
- D. organic molecules

Answer: 4



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329. The carnivorous plants live in water logged or boggy habitats which are

- A. deficient in nitrates
- B. deficient in sulphites
- C. deficient in oxygen
- D. deficient in many salts.

Answer: 1



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330. Which one of the following insectivorous plant is also known as Sundew plant ?

- A. Nepenthes
- B. Drosera
- C. Utricularia

D. Dionaea

Answer: 2



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331. Match the following essential elements (List-I) with their respective roles (List-II) and select the correct answer using

the codes given below the lists

List-I	List-II
A. Chlorine	1. Constituent of plastocyanin
B. Copper	2. Constituent of nitrate reductase
C. Molybdenum	3. Constituent of alcohol dehydrogenase
D. Zinc	4. Required for O_2 evolution in photosynthesis
	5. Required for phosphate transfer

A. *A B C D*
4 1 3 2

B. *A B C D*
1 2 5 3

C. *A B C D*
1 4 5 2

D. *A B C D*
4 1 2 3

Answer: 4



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332. Which of the following components are associated with nitrate reductase activity?

1. Reduced pyridine nucleotide
2. Flavin adenine dinucleotide
3. Molybdenum
4. Boron

Select the correct answer using the codes given below

- A. 1, 2 and 3
- B. 1 and 2
- C. 2, 3 and 4
- D. 1, 3 and 4

Answer: 1

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333. Farmers have reported over 50 % higher yield of rice by using which of the following biofertilizer?

- A. Mycorrhiza
- B. Anabaena azollae
- C. Lichen
- D. Legume-rhizome symbiosis

Answer: 2

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334. Read the following statements regarding the mineral nutrition in plants

(1) For the elements that are actively mobilized within the plants, the deficiency symptoms tend to appear first in the young tissues.

(2) Manganese competes with iron and magnesium for uptake and with magnesium for binding with enzymes.

(3) Manganese inhibits calcium translocation in shoot apex.

(4) Rhodospirillum is aerobic free-living nitrogen fixing microbe.

Which of these are correct

A. (i), (iii) & (iv)

B. (ii) & (iv)

C. (ii) & (iii)

D. (ii), (iii) & (iv)

Answer: 3



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335. Read the following matches regarding the elements and their deficiency symptoms in plants

(i) Molybdenum - Brown heart of turnip

(ii) Potassium - Plastid disintegration

(iii) Magnesium - Underdeveloped phloem & pith

(iv) Phosphorus - Delay in seed germination

Which of these are correct

A. (i), (iii) & (iv)

B. (ii), (iii) & (iv)

C. (i), (ii) & (iii)

D. (iii) & (iv) only

Answer: 2



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336. The disease 'little leaf' of fruit trees is caused by the deficiency of

A. Copper

B. Zinc

C. Manganese

D. Cobalt

Answer: 2



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337. Match the following

- | | |
|---------------|--|
| (i) Boron | (p) Water-splitting reaction in photosynthesis |
| (ii) Chlorine | (q) Synthesis of auxin |
| (iii) Zinc | (r) Redox reactions |
| (iv) Copper | (s) Uptake and utilization of Ca^{2+} |

A. (i)- (p), (ii)- (r), (iii)- (q), (iv)- (s)

B. (i)- (r), (ii)- (p), (iii)- (q), (iv)- (s)

C. (i)- (s), (ii)- (p), (iii)- (q), (iv)- (r)

D. (i)- (s), (ii)- (q), (iii)- (p), (iv)- (r)

Answer: 3



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338. Match the following

- | | |
|---------------|---|
| (i) Magnesium | (p) Activator of alcohol dehydrogenase |
| (ii) Zinc | (q) Component of ferredoxin and cytochromes |
| (iii) Iron | (r) Activator of Rubisco |
| (iv) Boron | (s) Pollen germination |

A. (i)- (r), (ii)- (p), (iii)- (s), (iv)- (q)

B. (i)- (s), (ii)- (p), (iii)- (q), (iv)- (r)

C. (i)- (r), (ii)- (q), (iii)- (p), (iv)- (s)

D. (i)- (r), (ii)- (p), (iii)- (q), (iv)- (s)

Answer: 4



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339. Match the following

- | | |
|----------------|--|
| (i) Calcium | (p) Constituent of ferredoxin, thiamine & biotin |
| (ii) Potassium | (q) Formation of mitotic spindle |
| (iii) Sulphur | (r) Splitting of water to liberate O_2 during photosynthesis |
| (iv) Manganese | (s) Maintenance of anion-cation balance |

A. (i)- (q), (ii)- (s), (iii)- (p), (iv)- (r)

B. (i)- (s), (ii)- (q), (iii)- (p), (iv)- (r)

C. (i)- (p), (ii)- (s), (iii)- (q), (iv)- (r)

D. (i)- (q), (ii)- (r), (iii)- (p), (iv)- (s)

Answer: 1



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340. Critical toxicity level caused by mineral nutrients means reduction in dry weight of plant tissue by

- A. 5 %
- B. 10 %
- C. 20 %
- D. 25 %

Answer: 2



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341. Match List - I (Element) with List - II (Process) and select the correct answer using the codes given below the lists

List-I	List-II
A. Molybdenum	1. Photosynthesis
B. Manganese	2. Respiration
C. Sulphur	3. Nitrate reduction
D. Calcium	4. Cell division
	5. Protein synthesis

A. *A B C D*
5 2 3 1

B. *A B C D*
3 1 5 4

C. *A B C D*
2 1 4 5

D. *A B C D*
3 2 4 5

Answer: 2



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342. Consider the following statements:

1. Copper is present in cytochrome oxidase.

2. Pantothenic acid is the precursor of coenzyme A.

3. Thiamine pyrophosphate is the prosthetic group in decarboxylases

4. Zinc is present in RNA and DNA polymerases

Which of these statements are correct?

A. 1 and 2

B. 2, 3 and 4

C. 1, 2, 3 and 4

D. 1, 3 and 4

Answer: 1



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343. Regarding the mineral nutrition of plants, which one of the following statements is correct?

- A. The availability of iron to plants decreases with the increase of acidity of the soil
- B. Molybdenum is a constituent of nitrate reductase system
- C. Sulphur is a constituent of phenylalanine
- D. All of the above

Answer: 2



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344. Consider the following enzymes

1. Glutamate dehydrogenase
2. Glutamine synthetase
3. Glutamate synthase

Which of these are concerned with ammonia assimilation?

- A. (a) 1 and 2
- B. (b) 2 and 3
- C. (c) 1 and 3
- D. (d) 1, 2 and 3

Answer: 4



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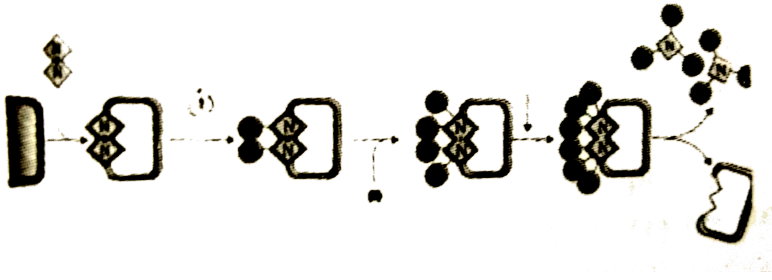
345. Which one of the following pairs is not correctly matched?

- A. Copper Plastocyanin
- B. Sulphur Serine
- C. Molybdenum Nitrate reductase
- D. Zinc Alcohol dehydrogenase

Answer: 2

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346. After going through the diagram choose the correct option



Name	Enzyme	(i)	(ii)
of the	used		

A. Process

Trans-amination	Transaminase	Oxidation	Glutamate
Name	Enzyme	(i)	(ii)
of the	used		

B. Process

Nitrogen fixation	Nitrogenase	Dehydrogenation	$2H$
Name	Enzyme	(i)	(ii)
of the	used		

C. Process

Reductive amination	Dehydrogenase	Reduction	NH_3
Name	Enzyme	(i)	(ii)
of the	used		

D. Process

Nitrogen fixation	Nitrogenase	Reduction	$2H$
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Answer: 4



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347. Go through the following matches

(i) Calcium - Required by meristematic and differentiating tissues

(ii) Nitrogen - Mineral element required by plants in the greatest amount.

(iii) Magnesium - Activates enzymes involved in DNA and RNA synthesis.

(iv) Iron - Mainly obtained by plants in ferrous form

Which of these are correct

A. (i), (ii) and (iii)

B. (ii) and (iii)

C. (i), (iii) & (iv)

D. All are correct

Answer: 1



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348. Read the following matches

(i) Zinc - Activator of catalase

(ii) Calcium - Required during formation of mitotic spindle

(iii) Sulphur - Constituent of ferredoxin

(iv) Chlorine - Essential for water- splitting reaction in photosynthesis

Which of these are correct

A. (i), (ii) & (iii)

B. (ii), (iii) & (iv)

C. (iii) & (iv)

D. (i) & (ii)

Answer: 2



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349. Go through the following matches

(i) Copper - Absorbed as cuprous ions

(ii) Molybdenum - Component of nitrate reductase

(iii) Chlorine - Needed in synthesis of auxin

(iv) Boron - Required for uptake and utilization of Ca^{2+}

Which of these are correct:

A. (i), (ii) & (iii)

B. (ii), (iii) & (iv)

C. (ii) & (iv)

D. All are correct

Answer: 3



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350. Read the following matches

(i) Boron - Pollen germination

(ii) Manganese - Splitting of water during photosynthesis

(iii) Zinc - Activates carboxylases

(iv) Copper - Involved in redox reactions

Which of these are correct

A. (i), (ii) & (iii)

B. (ii), (iii) & (iv)

C. (i), (iii) & (iv)

D. All are correct

Answer: 4



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351. Read the following statement regarding the mineral

(i) Both Rhizobium and Frankia are free living in soil, but as symbionts, can fix atmospheric nitrogen.

(ii) Ammonia synthesis by nitrogenase requires 16 ATP for each ammonia produced.

(iii) While most of plants can assimilate nitrate as well as ammonium ions, the latter is quite toxic to plants and hence cannot accumulate in them.

(iv) Along with the transpiration stream, the nodules of some plants export the fixed nitrogen as urides.

Which of these are correct

A. (i), (iii) & (iv)

B. (ii), (iii) & (iv)

C. (iii) & (iv)

D. All are correct

Answer: 1



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352. Go through the following matches with reference to the elements and their deficiency symptoms in plants:

(i) Sulphur - Reduced nodulation in legumes

(ii) Boron - Whiptail disease

(iii) Sulphur - Blossom and rot of tomato

(iv) Nitrogen - Wrinkling of cereal grains

Which of these are correct

A. (i), (ii) & (iii)

B. (i) & (iii)

C. (ii), (iii) & (iv)

D. (i) & (iv)

Answer: 4



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353. With reference to mineral nutrition in plants, which one of the following pair is not correctly matched?

- A. (a) Molybdenum - Required for nitrogen fixation and nitrate reduction
- B. (b) Manganese - Required for integrity of chloroplast membrane and for oxygen release in photosynthesis
- C. (c) Iron - Required for development of chlorophyll and its pigments.
- D. (d) Magnesium - involved in osmosis and ionic balance, and in opening and closing of stomata.

Answer: 4



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354. Yield of Rice is enhanced by

A. Azotobacter

B. Anabaena

C. Cyndrospermum

D. Clostridium

Answer: 2



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355. By the reaction of α - ketoglutaric acid with ammonia, through which of the process glutamic acid is formed?

A. oxidative amination

B. reductive amination

C. ammonification

D. transamination

Answer: 2



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356. Which of the following is must for chlorophyll synthesis

A. Fe

B. Mg

C. K

D. Mn

Answer: 2



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

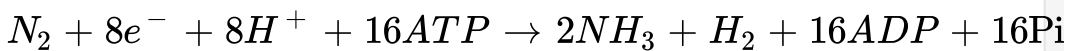
- A. (a) chlorosis
- B. (b) etiolation
- C. (c) shortening of internodes
- D. (d) necrosis

Answer: 2



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358.



The above equation refers to

- A. ammonification
- B. nitrificaion
- C. nitrogen fixation
- D. denitrification

Answer: 3



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359. Which element is essential as electron carrier?

- A. Potassium
- B. Iron
- C. Zinc
- D. Calcium

Answer: 2



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360. Which of the following is a mobile mineral element in the plants?

A. Ca

B. Mo

C. Fe

D. Cu

Answer: 2



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361. Which of the following micronutrients is essential for activation of urease, the enzyme involved in nitrogen metabolism ?

A. Boron

B. Molybdenum

C. Zinc

D. Nickel

Answer: 4



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362. In nitrification, ammonia is first oxidised to nitrite by

A. Nitrosomonas and Nitrococcus

B. Nitrosomonas and Nitrobactor

C. Pseudomonas and Nitrococcus

D. Pseudomonas and Thiobacillus

Answer: 1



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363. Leguminous plants are able to fix atmospheric nitrogen through the process of symbiotic nitrogen fixation. Which one of the following statements is not correct during this process of nitrogen fixation?

A. Leghaemoglobin scavenges oxygen and is pinkish in colour

B. Nodules act as sites for nitrogen fixation

C. The enzyme nitrogenase catalyses the conversion of atmospheric N_2 to NH_3

D. Nitrogenase is insensitive to oxygen

Answer: 4



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364. Which one of the following is not a micronutrient?

A. Boron

B. Molybdenum

C. Magnesium

D. Zinc

Answer: 3



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365. An element playing important role in nitrogen fixation is

- A. Zinc
- B. Molybdenum
- C. Copper
- D. Manganese

Answer: 2



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366. One of the free-living, anaerobic nitrogenfixer is

A. Azotobacter

B. Beijernickia

C. Rhodospirillum

D. Rhizobium

Answer: 3



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367. Which one of the following is not an essential mineral element for plants while the remaining three are?

A. Iron

B. Manganese

C. Cadmium

D. Phosphorus

Answer: 3



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368. An organism used as a biofertilizer for raising soyabean crop is

A. Azotobacter

B. Azospirillum

C. Rhizobium

D. Nostoc

Answer: 3



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369. Nitrifying bacteria

- A. Oxidize ammonia to nitrates
- B. Convert free nitrogen to nitrogen compounds
- C. Convert proteins into ammonia
- D. Reduce nitrates to free nitrogen

Answer: 1



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370. The function of leghaemoglobin in the root nodules of legumes is

- A. Inhibition of nitrogenase activity
- B. Oxygen removal
- C. Nodule differentiation
- D. Expression of nif gene

Answer: 2



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371. Hydroponics is the method of

- A. water conservation

B. plant development in water without soil

C. plant development without soil

D. plant development in saline soil

Answer: 2



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372. Which one of the following elements (miconutrients) in plants is not remobilised ?

A. Phosphorus

B. Calcium

C. Potassium

D. Sulphur

Answer: 2



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373. Which one of the following is not an essential mineral element for plants while the remaining three are?

- A. Iron
- B. Manganese
- C. Cadmium
- D. Phosphorus

Answer: 3



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374. Cuscuta is an example of a

- A. Predation
- B. Endoparasitism
- C. Ectoparasitism
- D. Brood parasitism

Answer: 3



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375. For its action, nitrogenase requires

- A. Mn^{2+}
- B. Super oxygen radicals

C. High input of energy

D. Light

Answer: 3



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376. Which one of the following is wrong statement ?

A. Root nodule forming nitrogen fixers live as aerobes under free-living conditions

B. Phosphorus is a constituent of cell membranes, certain nucleic acids and all proteins

C. Nitrosomonas and Nitrobacter are chemoautotrophs

D. Anabaena and Nostoc are capable of fixing nitrogen in free-living state also

Answer: 2



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377. A nitrogen fixing microbe associated with Azolla in rice fields is

- A. Anabaena
- B. Frankia
- C. Tolypothrix
- D. Spirulina

Answer: 1



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378. Best defined function of Manganese in green plants is

- A. Calvin cycle
- B. Nitrogen fixation
- C. Water absorption
- D. Photolysis of water

Answer: 4



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379. The first stable product of fixation of atmospheric nitrogen in leguminous plants is

A. NO_3^-

B. Glutamate

C. NO_2^-

D. Ammonia

Answer: 4



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380. Deficiency symptoms of nitrogen and potassium are visible first in (A) Buds (B) Senescent leaves (C) Young leaves (D) Roots

A. Buds

B. Senescent leaves

C. Young leaves

D. Roots

Answer: 2



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381. Which one gives the most valid and recent explanation for stomatal movements?

A. Potassium influx and efflux

B. Starch hydrolysis

C. Guard cell photosynthesis

D. Transpiration

Answer: 1



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382. During biological nitrogen fixation, inactivation of nitrogenase by oxygen poisoning is prevented by

- A. (a) leghaemoglobin
- B. (b) xanthophyll
- C. (c) carotene
- D. (d) cytochrome

Answer: 1



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383. In which of the following, all three are macronutrients?

(A) Iron, copper, molybdenum (B) Molybdenum, magnesium, manganese (C) Nitrogen, nickel, phosphorus (D) Boron, zinc, manganese

A. Iron, copper, molybdenum

B. Molybdenum, magnesium, manganese

C. Nitrogen, nickel, phosphorus

D. Boron, zinc, manganese

Answer: none



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384. Which is essential for the growth of root tip?

A. (a) Zn

B. (b) Fe

C. (c) Ca

D. (d) Mn

Answer: 3



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385. Select the mismatch

A. Frankia - Alnus

B. Rhodospirillum - Mycorrhiza

C. Anabaena - Nitrogen fixer

D. Rhizobium - Alfalfa

Answer: 2



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386. In which of the following forms is iron absorbed by plants?

- A. Both ferric and ferrous
- B. Free element
- C. Ferrous
- D. Ferric

Answer: 4



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387. Which of the following elements is responsible for maintaining turgor in cells?

A. Calcium

B. Potassium

C. Sodium

D. Magnesium

Answer: 2



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