BIOLOGY

BOOKS - CHETANA PUBLICATION

PLANT GROWTH AND MINERAL NUTRITION

Example

1. Do you think that the growth is property of living beings only?

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2. Is there any difference between plant growth and animal growth?

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3. What is the difference between growth of non-living material and living organism?

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4. Define Growth.

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5. Plant growth is localized and irreversible. Give reason.

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6. Describe growth in brief.

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7. Write a short note on Earth's atmosphere?

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8. Explain the aspects of growth.

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9. What does it mean by 'open growth'?

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10. Enlist the important characteristics of plant growth.

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11. Describe the phases of growth.

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12. Describe the phases of growth.

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13. Describe the phases of growth.

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14. Write a short note on: Elongation phase.

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15. Enlist the different environmental and physiological conditions necessary for the growth.

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16. Describe in detail the chief conditions needed for growth.

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17. What is growth rate?

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18. How is rate of growth measured?

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19. What are the different terms to consider in order to measure growth in plants?

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20. Describe various methods for measurement of linear growth of stem and radicle.

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21. What is growth rate? Explain types of growth rate.

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22. What is absolute growth rate (AGR) and relative growth rate (RHR)?

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23. Differences between arithmetic and geometric growth.

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24. What are the three types of growth curves?

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25. Define Lag phase.

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26. Define Exponential (Log) phase.

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27. Define Stationary (steady) phase.

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28. During which phase maximum growth takes place?

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29. What changes occur in cells with resprct to different growth phases?

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30. "Growth curve is always 'S' shaped or sigmoid" Justify.

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31. What is Grand period of Growth (GPG)?

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32. Write a short note on Grand Period of Growth.

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33. Explain sigmoid growth curve with the help of diagram.

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34. Explain defferent phases of growth with the help of growth curve.

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35. Sketch label and describe the standard growth curve.

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36. What changes occur in cells with resprct to different growth phases?

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37. Is there any relation between phases of growth and regions of growth curve?

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38. Write short note on: Differentiation.

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39. Write short note on: De-differentiation.

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40. Write short note on Re-differentiation.

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41. Define Development.

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42. What is development? What are the factos influencing development?

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43. What is the sequence of developmental process in plant cell?

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44. With the help of a flow chart represent the sequence of the developmental process in plant cell.

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45. Definie plasticity.

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46. Write short note on: Plasticity.

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47. Define Phytohormones.

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48. What are the types of growth regulators?

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49. What are the characteristrics of growth hormone?

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50. Which tissue transports plant hormones?

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51. Who coined the term "Auxin"?

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52. Explain in brief the surface tension property observed in liquid at rest.

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53. Write a note on "Avena Coleoptila test".

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54. Describe in detail the contribution of various scientists during the process of discovery of auxin as the first plant hormone.

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55. Write a short note on: Apical dominance.

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56. "Art of pruning" is practised by gardeners. Give reason.

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57. Give the physiological effects and applications of auxins" .

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58. State the role of reagents shown on arrows in the following chemical reactions.

$$CH_3CH_2OH \xrightarrow{KMnO_4} CH_3COOH$$

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59. Give the full form of IAA?

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60. Which hormones are used to produce seedless or parthenocarpic fruits?

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61. How dicotyledonous weeds can be eliminated from a monocot crop field?

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62. Which is standard bioassay method for auxins?

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63. Who discovered gibberellins and How?

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64. Who coined the term evolution?

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65. Which is the first discovered, most studied Gibberellin? State its chemical composition.

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66. How does the synthesis and transport of Gibberellins occur?

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67. What are gibberellins?

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68. Enlist the applications of gibberellins.

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69. What is the role of gibberellin in rosette plants?

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70. What induces parthenocarpy in grapes?

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71. What can include bolting in a cabbage plant?

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72. Effect of Gibberellin application of apple.

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73. Which is standard bioassay method for gibberellin?

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74. Who discovered first cytokinin? And how?

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75. Who coined the term "Auxin"?

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76. What is Richmond- Lang effect?

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77. Name the first natural cytokinin obtained from unripe maize grains.

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78. Which plant hormone is named anti-aging hoemone?

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79. Name the plant hormone that can delay sensecence.

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80. What are cytokinins? How are they synthesised?

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81. Give the physiological effects and applications of auxins" .

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82. How can we overcome apical dominance?

Watch Video Solution

83. Which is standard biossary method for cytokinin?

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84. What is Ethylene?"

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85. Ethylene is also called as the ripening hormjone. Give reason.

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86. What does an over ripe apple release, which affect all other apples in a basket?

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87. State the history of Ethylene invention.

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88. What is the chemical nature of Ethylene?

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89. Enlist the physiological effects and applications of ethylene.

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90. Describe different actions of gaseous natural plant hormone in plants.

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91. Define Degreening.

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92. Which is standard bioassay method for ethylene?

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93. Name the plant hormone that inhibits the growth of plants."

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94. Name the stress hormone in plants that functions during drought.

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95. Which is the plant stress hormone?

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96. ABA is called as stress hormone. Why?

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97. Describe the invention of Abscissic acid (ABA).

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98. Chemical nature of chitin is..... .

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99. What are the key roles of Abscisic acid?

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100. Describe the physiological effects of Abscisic acid.

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101. What are the applications of buffer solutions?

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102. Which is standard bioassay method for Abscisic acid?

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103. Define photoperiodism.

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104. What is photoperiodic stimulus?

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105. What are Phytochromes?

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106. What is critical photoperiod?

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107. What is short day plant? Give any two examples?

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108. What is long day plant? Give any two examples?

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109. What is Vernalization? Give its significance.

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110. Write a short note on ATP.

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111. What is devernalization?

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112. Define Essential and Non-essential elements

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113. Define: Mineral nutrition.

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114. Define Essential and Non-essential elements

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115. Enlist various essential elements requried for the growth of plants.

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116. What do you mean by macronutrients and micronutrients? Give examples

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117. Differentiate between macronutrients and micronutrients.

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118. What are hunger signs in plants?

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119. What are the various criteria for essential of elements?

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120. Describe the different types of photosynthetic pigments.

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121. What are the requirements for materials used in solar cell.

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122. Define Chlorosis and Necrosis.

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123. Write a note on mineral toxicity.

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124. Explain the role/functions and deficiency symptoms of any one macronutrients.

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125. What is meant by absorption of minerals?

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126. In which form, minerals are absorbed by root cells?

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127. "Mineral absorption is mainly an active process". Justify.

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128. Different modes of passive absorption and active absorption of mineral in plants.

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129. Differentiate between Active and Passive Absorption.

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130. Write a note on Donnan equilibrium.

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131. List and explain two mechanism of water absorption.

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132. How are the minerals absorbed by the plant?

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133. What is nitrogen cycle?

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134. How is the regular supply of nitrogen manitained to plants?

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135. What is nitrogen fixation?

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136. Answer the given question orally:

Name the microorganisms that help in biological fixation of nitrogen.

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137. Name the two types of biological nitrogen fixation.

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138. Name the two types of nitrogen fixers.

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139. Name the best-known symbiotic nitrogen fixing bacterium.

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140. Name two free living nitrogen fixing bacteria.

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141. What is nitrification?

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142. Name the enzyme involved in biological nitrogen fixation.

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143. Which pigment is present in the root nodules of legumes/legumious plants/family Fabacea?

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144. What is the function of leghaemoglobin in root nodules of legumes (Pea, Beans, Gram)?

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145. How does leghaemogobin protect nitrogenase?

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146. The enzyme secreted by the pancreas is

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147. What type of condition is created by leghaemoglobin in the root nodules of

legumes?

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148. What is ammonitication?

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149. What is nitrogen assimilation?

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150. What is Denitrification?

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151. Name the bacteria responsible for conversion of nitrite to nitrate.

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152. List the organisms capable of Biological nitrogen fixation.

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153. Name the bacteria responsible for conversion of nitrite to nitrate.

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154. Give the biological significance of Nitrogen.

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155. What are/name the nitrifying bacteria of the soil?

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156. Why do farmers use leguminous crops to provide nitrogen to the soil? Explain.

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157. Why do farmers grow leguminous crops after harversting cereal crops?

Watch Video Solution

158. What is nitrification?

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

Watch Video Solution

160. Name the enzyme involved in biological nitrogen fixation.

Watch Video Solution

161. Name the enzyme involved in biological nitrogen fixation.

Watch Video Solution

162. How are amino acids synthesized in plants?

Watch Video Solution

163. Give a detailed account of nitrogen cycle with a schematic representation.

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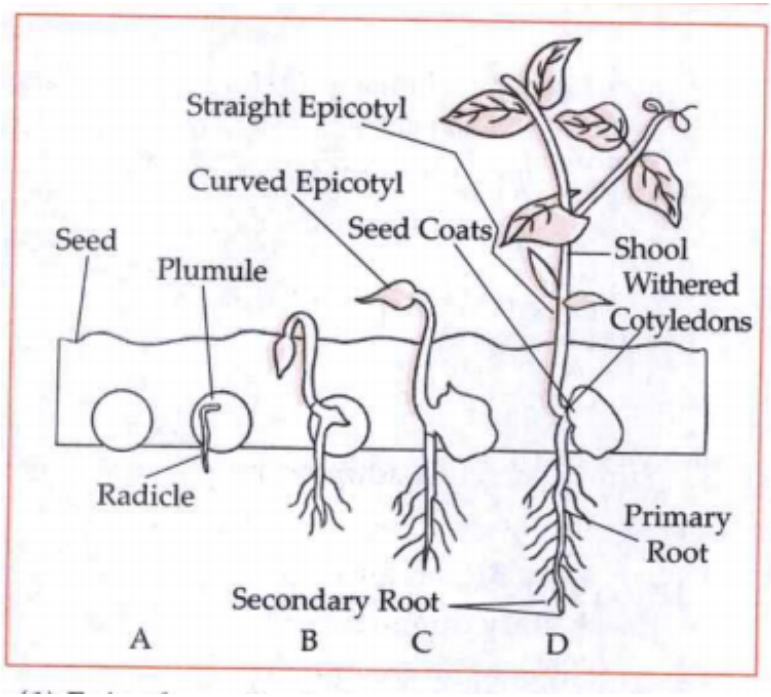
164. Label the following diagrams and identify the types of seed germination



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Exercise

1. Give the scientific term for the following: Utilization of various absorbed ions by a plant for its growth and development.

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2. Give the scientific term for the following: The techique of growing plants in water or solution culture.

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3. Give the scientific term for the following: Yellowing of leaves due to loss of chlorophyll.

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4. Give the scientific term for the following: Localised death of tissues of leaves or young shoots.

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5. Give the scientific term for the following: premature fall of leaves, flowers and fruits.

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6. Give the scientific term for the following: The growth phase is which growth occurs at an accelerated pace.

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7. Give the scientific term for the following: The ratio of change in the cell number over the time interval.

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8. Give the scientific term for the following: Influence of light on the flowering in higher plants.

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9. Give the scientific term for the following: Chilling treatment that induces early flowering in plants.

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10. Give the scientific term for the following: Light receiving proteinaceous pigment.

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11. State whether the following statements are True or False: Gibberellins cause parthenocarpy in some type of fruits.

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12. State whether the following statements are True or False: Ethylene retards senescence of leaves, flowers and fruits.

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13. State whether the following statements are True or False: Growth is rapid in lag phase.

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14. State whether the following statements are True or False: As the cells cease to divide, they increase in size.

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15. State whether the following statements are True or False: Sunflower is long day plant.

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16. Which of the hormones can replace vernalization?

A. Auxin

B. Cytokinin

C. Gibberellin

D. Ethylene

Answer:

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17. The principle pathway of water translocation in angiosperms is.....

A. Sieve cells

B. Sieve tube elements

C. Xylem

D. Xylem and phloem

Answer:

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18. Abscisic acid controls.....

A. cell division

B. leaf fall and dormancy

C. shoot elongation

D. cell elongation and wall formation

Answer:

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19. Which is employed for artificial ripening of banana fruits?

A. Auxin

B. Ethylene

C. Cytokinin

D. Gibberellin

Answer:

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20. Which of the following is required for stimulation of flowering in the plants?

A. Adequate oxygen

B. Definite photoperiod

C. Adequate water

D. Water and minerals

Answer:

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21. For short day plants, the critical period is.....

A. light

B. dark/night

C. u v rays

D. both a and c

Answer:

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22. Which of the following is not a day neutral plant?

A. Tomato

B. Cotton

C. Sunflower

D. soybean

Answer:

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23. Essential macroelements are.....

A. manufactured during photosynthesis

B. produced by enzymes

C. absorbed from soil

D. produced by growth hormones

Answer:

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24. Function of Zinc is.....

A. closing of stomato

B. bioisynthesis of 3-IAA

C. synthesis of chlorophyll

D. oxidation of carbohydrates

Answer:

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25. Necrosis means.....

A. Yellow spots on the leaves

B. death of tissue

C. darkening of green colour in leaves

D. wilting of leaves

Answer:

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26. Conversion of nitrates to nitrogen is called....

A. ammonification

B. nitrification

C. nitrogen fixation

D. denitrification

Answer:

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27. How many molecules of ATP are required to fix one molecule of nitrogen?

A. 12

B. 20

C. 6

D. 16

Answer:

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28. Pruning practice adopted by gardeners is based on.....

A. apical dominance

B. axillary dominance

C. Gibberellin treatment

D. auxin treatment

Answer:

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29. The fruit ripening horone is .....

A. ethylene

B. auxin

C. Cytokinin

D. abscissic acid

Answer:

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30. Chromophore pigments are associated with.....

A. phytochromes

B. cytochromes

C. chromosomes

D. centrosomes

Answer:

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31. Gibberellins was first isolated from.....

A. Avena sativa

B. algae

C. fungus

D. pteridophytes

Answer:

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32. Senescence is a phenomenon of ..... an organ.

A. acceleration

B. degradation

C. formation

D. regeneration

Answer:

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33. F.W. Went showed the presence of auxin by performing experiment on .....

A. Triticum vulgare

B. Avena sativa

C. Zea mays

D. Magifera indica

Answer:

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34. Seed dormancy is due to .....

A. ethylene

B. abscisic acid

C. Cytokinin

D. auxin

Answer:

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35. Apical dominance in plants is due to .....

A. enzymes

B. minerals

C. hormones

D. phytochromes

Answer:

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36. Parenchymatous cell may regain the capacity of cell division, this phenomenon is called.....

A. redifferentiation

B. differentiation

C. reaffirmation

D. dedifferentiation

Answer:

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37. In a growing plant, the very first phase during the process of growth is .....

A. cell division

B. cell enlargement

C. cell maturation

D. cell differentiation

Answer:

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38. Two climatic factors which affect growth are .....

A. light and Wind

B. light and temperature

C. rain and temperature

D. atmospheric humidity and temperature

Answer:

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39. Formation phase is .....

A. region of cell elongation

B. region of cell division

C. region of cell maturation

D. phase of differentiation

Answer:

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40. Growth hormone responsible for apical dominance is.....

A. Auxin

B. Cytokinin

C. gibberellin

D. ethylene

Answer:

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41. Gibberellins was first isolated from.....

A. Gibberella

B. gelidum

C. gracelaria

D. aspergilus

Answer:

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42. Which one is the function of gibberellin?

A. Bolting in cabbage

B. Morphogenesis in tobacco callus

C. Rapid division in carrot cells

D. Elongation of cut coleoptile

Answer:

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43. Gibberellins promote .....

A. Root elongation

B. seed germination

C. seed dormancy

D. leaf fall

Answer: root elongation

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44. Cytokinin .....

A. promote abscission

B. influence water movement

C. help to retain chlorophyll

D. inhibit protoplasmic streaming

Answer:

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45. Hormone discovered through tissue culture technique is.....

A. Auxin

B. Cytokinin

C. gibberellin

D. abscissic acid

Answer:

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46. Synthetic plant hormone is.....

A. IAA

B. 2, 4-D

C. GA

D. Zeatin

Answer:

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47. Pruning of plants promotes branching due to sensitisation of axillary buds by .....

A. IAA

B. Ethylene

C. Gibberellin

D. Cytokinin

Answer:

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48. If we remove apical bud in a flowering plant what will happen?

A. Promotion of lateral branching

B. Early flowering

C. Formation of a new apical bud

D. Adventitious root fromation on the cut side

Answer:

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49. Ageing is related to which of the following hormone?

A. Auxin

B. Gibberellin

C. Cytokinin

D. ABA

Answer:

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50. The deterioration process in plants, that naturally terminates their functional life is called.....

A. abscission

B. wilting

C. plasmolysis

D. sencescence

Answer:

51. Genetically dwarf pea plant (tt) can become phenotypically tall if treated with...

A. GA

B. 2, 4, 5-T

C. ABA

D. Colchicine

Answer:

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52. Florigen is produced in the region of .....

A. leaves

B. fruit

C. root

D. trunk

Answer:

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53. A long day plant is .....

A. Wheat/spinach

B. soybean

C. tobacco

D. xanthium

Answer:

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54. Flowering is influenced by .....

A. soil water content

B. soil acidity

C. photoperiod

D. content of green pigment

Answer:

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55. Garner and Allard are concerned with .....

A. photoperiodism

B. phototropism

C. photoysis

D. photophosphorylation

Answer:

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56. Photoperiodism was discovered in a variety of .....

A. rice

B. tomato

C. wheat

D. tobacco

Answer:

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57. Vernalisation term was coined by .....

A. Malchers

B. Lysenko

C. Klippart

D. Garner

Answer:

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58. Hormone reponsible for vernalization is .....

A. abscisin

B. vernalin

C. florige

D. caulocaline

Answer:

Watch Video Solution

59. Vernalization occurs in response to .....

A. high light iintensity

B. low temperature

C. high temperature

D. low liight intensity

Answer:

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60. Resumption of active growth in the sleeping embryo is an indication of the beginning of .....

A. dormancy phase

B. quescent phase

C. germination phase

D. rest phase

Answer:

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61. The growth process is slow, and the rate of growth is low and very gradually increasing during .....

A. deceleration phase

B. lag phase

C. both a and b

D. log phase

Answer:

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62. Which of the following growth regulators in plants are influenced by light?

A. Auxin

B. Gibberellin

C. Cytokinin

D. All of thses

Answer:

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63. In germinating grains, activity of enzymes α-amylese is induced by .....

A. IAA

B. GA

C. ABA

D. NAA

Answer:

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64. Long day plants can be made to flower even under short day conditions if treated with.....

A. auxins

B. gibberellins

C. Cytokinin

D. chilling treatment

Answer:

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65. Indentify the SDP from the given examples,

.....

A. spinach

B. xanthium

C. tomato

D. cotton

Answer:

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66. The flowering hormone is called.....

A. phytochrome

B. vernalin

C. photosensitive pigment

D. florigen

Answer:

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67. Vernalization treatment can convert....

A. a biennial into an annual

B. a spring variety into a winter variety

C. an annual into a perennial

D. all of these as mentioned

Answer:

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68. Chlorosis results from the deficiency of .....

A. Sodium

B. Boron

C. Magnesium

D. Phosphorus

Answer:

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69. Critical elements are .....

A. N, P, K

B. Na, P and Ca

C. N, P, Mg

D. Mn, Fe and Cu

Answer:

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70. Which of the following is trace element ?

A. Mg

B. Nitrogen

C. Sulphur

D. Mn

Answer:

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71. Which of the following is a macronutrient?

A. Ca

B. Mn

C. Zn

D. Mo

Answer:

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72. Nitrogen is an important constituent of .....

A. Carbohydrates

B. Sugars

C. Proteins

D. Polyphosphates

Answer:

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73. Two climatic factors which affect growth are .....

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B. light and temperature

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D. humidity and temperature

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90. Write a note on Donnan equilibrium.

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91. Write a note on Biological nitrogen fixation by Rhizobia.

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92. Explain defferent phases of growth with the help of growth curve.

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93. Describe the role and deficiency symptoms of any one macronutrient and any one micronutrient.

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94. What is nitrogen cycle?

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