

Class 9 Science Chapter 3 – Important Questions

Tissues in Action

 **New NCERT *Exploration* | 2026–27**

These questions are aligned with the new Chapter 3 **Tissues in Action**, covering **plant tissues, meristematic and permanent tissues, xylem, phloem, epithelial, connective, muscular and nervous tissues, joints and movement.**

SECTION A – VERY SHORT ANSWER QUESTIONS

1. What is a tissue?
2. Why are tissues important in multicellular organisms?
3. What is division of labour in multicellular organisms?
4. What are plant tissues?
5. What are animal tissues?
6. What is meristematic tissue?
7. What is permanent tissue?
8. Name the three types of meristematic tissues.
9. Where is apical meristem found?
10. What is the function of apical meristem?

11. Where is lateral meristem found?
 12. What is the function of lateral meristem?
 13. What is intercalary meristem?
 14. What is differentiation?
 15. Name the three types of simple permanent tissues.
 16. Name the two complex conducting tissues in plants.
 17. What is xylem?
 18. What is phloem?
 19. What is epithelial tissue?
 20. Name the four major types of animal tissues.
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SECTION B – MERISTEMATIC TISSUES

21. What are the main characteristics of meristematic cells?
22. Why can meristematic cells divide continuously?
23. Why do meristematic cells generally have dense cytoplasm?
24. Why are vacuoles generally absent or very small in meristematic cells?
25. Differentiate between apical, lateral and intercalary meristems.
26. How does apical meristem help a plant grow?
27. How does lateral meristem increase the girth of a plant?
28. Why does cutting the tip of a root affect its growth in length?

29. What happens when meristematic cells differentiate?
30. Why are meristematic tissues important for plant growth?
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SECTION C – PERMANENT TISSUES

31. What are permanent tissues?
32. How are permanent tissues formed?
33. What is simple permanent tissue?
34. What is complex permanent tissue?
35. Name the three simple permanent tissues.
36. Name the two complex permanent tissues.
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SECTION D – PARENCHYMA, COLLENCHYMA & SCLERENCHYMA

37. What is parenchyma?
38. What are the main characteristics of parenchyma cells?
39. What is the main function of parenchyma?
40. What is chlorenchyma?
41. What is aerenchyma?
42. How does aerenchyma help aquatic plants?
43. What is collenchyma?

- 44. How does collenchyma provide flexibility to plants?**
 - 45. What is sclerenchyma?**
 - 46. Why are sclerenchyma cells usually dead at maturity?**
 - 47. How does lignin contribute to the function of sclerenchyma?**
 - 48. Differentiate between parenchyma, collenchyma and sclerenchyma.**
 - 49. A plant part needs flexibility but should not break easily. Which tissue would be most suitable? Explain.**
 - 50. A plant part requires maximum mechanical strength. Which tissue would you expect there? Give a reason.**
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SECTION E – XYLEM & PHLOEM

- 51. What is the main function of xylem?**
- 52. What substances are transported by xylem?**
- 53. In which general direction does xylem transport water and minerals?**
- 54. What is the main function of phloem?**
- 55. What does phloem transport?**
- 56. Why is phloem called a food-conducting tissue?**
- 57. Differentiate between xylem and phloem.**
- 58. Name the main components of xylem.**
- 59. Name the main components of phloem.**
- 60. Which components of xylem are generally dead at maturity?**

- 61. Which components of phloem are living?**
- 62. Why does a plant need both xylem and phloem?**
- 63. What would happen if xylem stopped functioning?**
- 64. What would happen if phloem stopped transporting food?**
- 65. A plant receives sufficient water from the roots but its leaves cannot receive food from other parts. Which tissue may be malfunctioning? Explain.**

The textbook's chapter-end practice directly tests identifying the tissue responsible when food cannot be transported from leaves to roots.



SECTION F – PROTECTIVE TISSUES

- 66. What is epidermis?**
 - 67. What is the main function of epidermal tissue?**
 - 68. How does the epidermis protect plants?**
 - 69. What is the cuticle?**
 - 70. Why does the cuticle help reduce water loss?**
 - 71. What are stomata?**
 - 72. What are the functions of stomata?**
 - 73. What is cork tissue?**
 - 74. How does cork protect older parts of a plant?**
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SECTION G – ANIMAL TISSUES

- 75. Why do animals require specialised tissues?**
 - 76. Name the four major types of animal tissues.**
 - 77. What is epithelial tissue?**
 - 78. What are the main functions of epithelial tissue?**
 - 79. Where is epithelial tissue found?**
 - 80. Why are epithelial cells closely packed?**
 - 81. What is connective tissue?**
 - 82. What is the function of connective tissue?**
 - 83. Name different types of connective tissues.**
 - 84. What is the function of blood?**
 - 85. Why is blood considered a connective tissue?**
 - 86. What is the function of bone?**
 - 87. What is cartilage?**
 - 88. Differentiate between tendon and ligament.**
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SECTION H – MUSCULAR TISSUE

- 89. What is muscular tissue?**
- 90. What is the main function of muscular tissue?**
- 91. Name the three types of muscle tissue.**

- 92. What are striated muscles?**
 - 93. What are smooth muscles?**
 - 94. What are cardiac muscles?**
 - 95. Where are striated muscles found?**
 - 96. Where are smooth muscles found?**
 - 97. Where are cardiac muscles found?**
 - 98. Which muscles are generally under voluntary control?**
 - 99. Which muscles work involuntarily?**
 - 100. Differentiate between striated, smooth and cardiac muscles.**
 - 101. Why can cardiac muscles work continuously without our conscious control?**
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SECTION I – NERVOUS TISSUE

- 102. What is nervous tissue?**
- 103. What is the main function of nervous tissue?**
- 104. What is a neuron?**
- 105. Name the main parts of a neuron.**
- 106. What is the function of dendrites?**
- 107. What is the function of the axon?**
- 108. How does nervous tissue help coordinate body activities?**

109. Why is nervous tissue essential for responding to changes in the environment?

110. Draw and label a neuron.



SECTION J – JOINTS & MOVEMENT

111. What is a joint?

112. Why are joints important for movement?

113. What is a fixed joint?

114. Give an example of a fixed joint.

115. What is a hinge joint?

116. Give examples of hinge joints.

117. What is a ball-and-socket joint?

118. Give an example of a ball-and-socket joint.

119. What is a pivot joint?

120. Give an example of a pivot joint.

121. Differentiate between fixed, hinge, pivot and ball-and-socket joints.

122. Which joint allows movement in almost all directions?

123. Which joint allows movement mainly in one plane?

124. Which joint allows rotational movement?



SECTION K – APPLICATION-BASED QUESTIONS

125. A plant grows taller after several weeks.

- a) Which tissue is responsible for increase in length?
 - b) Where is this tissue located?
 - c) Why can its cells divide repeatedly?
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126. A tree gradually becomes thicker as it grows.

- a) Which type of meristem is responsible?
 - b) How does it increase the girth of the plant?
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127. A plant's stem bends in strong wind but does not break easily.

- a) Which tissue helps provide this flexibility?
 - b) What structural feature of its cells makes this possible?
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128. A coconut shell is very hard and strong.

- a) Which type of tissue is mainly associated with such mechanical strength?
 - b) What feature gives this tissue its strength?
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129. A plant's leaves produce food but the roots are not receiving enough of it.

- a) Which tissue may be affected?
 - b) What does this tissue normally transport?
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130. A plant is unable to transport water from roots to leaves.

- a) Which tissue is malfunctioning?
 - b) What does this tissue transport?
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131. A person accidentally touches a hot object and quickly withdraws the hand.

- a) Which type of tissue detects and transmits the information?
 - b) Which tissue produces the movement?
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132. A person's heart continues beating even while they are asleep.

- a) Which type of muscle is involved?
 - b) Is its action voluntary or involuntary?
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SECTION L – COMPETENCY-BASED QUESTIONS

133. 🌱 Case Study – Growing Root

An onion bulb is placed in water and roots begin to grow. The root tips are then removed from one bulb while another bulb is left unchanged.

Answer the following:

- a) Which bulb acts as the control?
- b) Which tissue is present at the root tip?
- c) What is likely to happen after the root tip is removed?
- d) What does this experiment demonstrate?

This reflects the chapter's investigation of root-tip growth and the role of meristematic cells.
([Evidyarthi](#))

134. 💧 Case Study – Transport in Plants

A plant has healthy leaves but the roots begin to dry because water is not reaching them properly.

- a) Which conducting tissue transports water and minerals?
 - b) Where does most of the water enter the plant?
 - c) Why is continuous transport necessary?
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135. Case Study – Muscles

A person can consciously move their arm, but cannot consciously stop the beating of their heart.

- a) Which type of muscle moves the arm?
 - b) Which type of muscle is present in the heart?
 - c) Differentiate between the control of these two muscles.
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136. Case Study – Nervous System

A student sees a ball coming towards them and immediately moves their hand to catch it.

- a) Which tissue receives and transmits information?
 - b) Which tissue produces movement?
 - c) Why is coordination between these tissues necessary?
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SECTION M – HIGHER-ORDER THINKING QUESTIONS

137. Why is division of labour important in multicellular organisms?

138. Why are meristematic cells structurally different from permanent cells?

139. Why are many supporting plant tissues made of dead cells?

140. Why are plants able to remain upright without a skeleton like animals?

141. Why do plants need both conducting and supporting tissues?
142. Why are xylem and phloem called complex tissues?
143. Why is phloem transport different from xylem transport?
144. Why are animal tissues generally more specialised for movement and coordination than plant tissues?
145. Why are epithelial cells closely packed while connective tissue generally has more extracellular material?
146. Why does the structure of a tissue usually relate closely to its function?
147. Why would damage to nervous tissue affect coordination?
148. Why would damage to muscular tissue affect movement?
149. Why are different types of joints necessary in the human body?
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SECTION N – LONG ANSWER QUESTIONS

150. Define tissue and explain why tissues are necessary in multicellular organisms.
151. Describe meristematic tissue and explain its three types.
152. Explain the characteristics and functions of permanent tissues in plants.
153. Differentiate between parenchyma, collenchyma and sclerenchyma.
154. Explain the structure and functions of xylem and phloem.

155. Explain how different plant tissues work together to support plant growth and survival.
156. Describe the four major types of animal tissues and their functions.
157. Explain epithelial tissue and its different functions in the body.
158. Explain connective tissue with examples.
159. Describe the three types of muscular tissue and compare them.
160. Explain the structure and function of nervous tissue with a labelled diagram of a neuron.
161. Explain the different types of joints in the human body with suitable examples.
162. Compare plant tissues and animal tissues. Why are they structurally different?
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MOST IMPORTANT QUESTIONS FOR EXAM

If students have limited time, prepare these **first**:

- ★ 1. What is a tissue? Why is division of labour important?
- ★ 2. Explain the three types of meristematic tissues.
- ★ 3. Differentiate between meristematic and permanent tissues.
- ★ 4. Differentiate between parenchyma, collenchyma and sclerenchyma.
- ★ 5. Explain the functions of xylem and phloem.
- ★ 6. Differentiate between xylem and phloem.
- ★ 7. Explain epithelial, connective, muscular and nervous tissues.
- ★ 8. Differentiate between tendon and ligament.

- ★ 9. Differentiate between striated, smooth and cardiac muscles.
 - ★ 10. Draw and explain a neuron.
 - ★ 11. Explain different types of joints with examples.
 - ★ 12. Compare plant tissues and animal tissues.
 - ★ 13. Explain the onion root-tip experiment and its conclusion.
 - ★ 14. A plant cannot transport food from leaves to roots. Identify the tissue and explain.
 - ★ 15. Explain how the structure of a tissue is related to its function.
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QUICK REVISION BOX

 **Meristematic tissue** → Active cell division → Plant growth

 **Apical meristem** → Increase in length

↔ **Lateral meristem** → Increase in girth

 **Parenchyma** → Storage/photosynthesis

 **Collenchyma** → Flexibility and support

 **Sclerenchyma** → Strength and rigidity

 **Xylem** → Water + minerals

 **Phloem** → Food

 **Epidermis** → Protection

 **Epithelial tissue** → Protection, absorption, secretion, exchange

 **Connective tissue** → Support, binding and transport

 **Muscular tissue** → Movement

 **Nervous tissue** → Coordination and transmission of signals

 **Ball & socket** → Movement in many directions

 **Hinge** → Mainly one plane

 **Pivot** → Rotation

 **Fixed** → Little/no movement

TOP 10 DIAGRAMS / FIGURES TO PRACTISE

1.  **Types of meristematic tissues**
2.  **Parenchyma**
3.  **Collenchyma**
4.  **Sclerenchyma**
5.  **Xylem**
6.  **Phloem**
7.  **Epithelial tissue**
8.  **Types of muscle tissue**
9.  **Neuron**
10.  **Types of joints**

For this chapter, a useful answer format is: **Name of tissue** → **structural feature** → **function** → **location/example**. This directly connects structure with function, which is a major theme of the chapter.