

LESSON PLAN [2019 -- 2020]



DLF Public School
THE LEARNING ACADEMY
Managed By Darbari Lal Foundation

Teacher Name	Class	Subject	Time slot	Date	Lesson	Topic
	IX	Biology	35 min. Pd1	May	Tissues	Introduction to the concept of tissues. types-plant and animal
Expected Learning Outcome: *Students will be able define the term tissue and differentiate it from a cell. *Differentiate between plant tissues and animal tissues.						
Expected skill development: Reading skills while comprehending the question asked. *Comprehension of the text while asking questions and writing answers. *Developing scientific vocabulary and it's proper usage.						

FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

Introduction-. Students would be asked a few questions to review their knowledge about tissues –[5 min]

Q1. What is a cell?

Q2. Can cells work in groups? What do we call such group of cells?

*Students will be able to correlate the concept of cell and formation of tissues in the body. [15 min]

* be defining tissues as group of cells similar in structure, function and origin working together to complete a common function.

*Identify the division of labour in body and signify its importance through tissues as-

Cell---tissue-----organ----organ system----organism through some exs.(students would be asked to give exs from both plant and animals)

Students on the basis of their knowledge of cells would be able to Compare plant and animal tissues through discussion on the basis of-

- Motility of the organism
- Mode of nutrition and reserve food
- Nature of cells-living/dead
- Pattern of growth

- Structural organization
- Teaching methodology- discussion through examples from life , lecture method, Question answer through open ended situations

Thinkline – Do we as animals have undifferentiated cells in our body?[5 min]

Continued:

Closure-The class would be summarized asking students to review the concept of division of labour and compare plant and animal tissues in a tabular form.

Q. Differentiate between plant and animal tissue.

• Proposed Questions [5 min] Q1.In multicellular organisms do cells work in groups? Q2. What is a tissue? Q3.Are plant and animal tissues similar? Q4.Compare plant and animal tissues.(c.w)	
• Evaluation/Assessment: Oral recapitulation of the topics discussed in the previous class. Asking to summarize the difference between plant and animal tissue in a tabular form.	
Learners on the way *Individual attention within the class. *Extra input time outside the class. *Peer learning through appropriate seating arrangement. Q. Why are plant cells rigid in nature?	Advanced Learners *Assist the peers in comprehending the questions and writing answers with scientific vocabulary.. Q. Find out sites in your body where undifferentiated cells are present.
Materials needed/Resources: *Class IX NCERT textbook *Blackboard, chalk	

Common Misconceptions: Unable to comprehend the concept of undifferentiated cells.	Addressing the misconceptions: Discussion on the potential of undifferentiated cells.
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- Home Assignments: [5 min]
NCERT pg no-69-Q1-Q. What is a tissue?
Q2-Q. What is the utility of tissue in multi cellular organisms?

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Teacher Name	Class	Subject	Time slot	Date	Lesson	Topic
	IX	Biology	35 min. Pd 2	May	Tissues	Plant tissues
Expected Learning Outcome: Students will be able to - *Classify and compare various types of plant tissues as meristimatic and permanent tissues *Classify meristimatic tissue as-apical/intercalary and lateral on the basis of location and represent using diagrams.						
Expected skill development: Reading skills while comprehending the question asked. *Comprehension of the text while asking questions and writing answers. *Developing scientific vocabulary and it's proper usage. *Critical thinking through open ended questions and to differentiate between different tissues. *Exhibiting creativity and accuracy of diagrams of tissues.						

FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

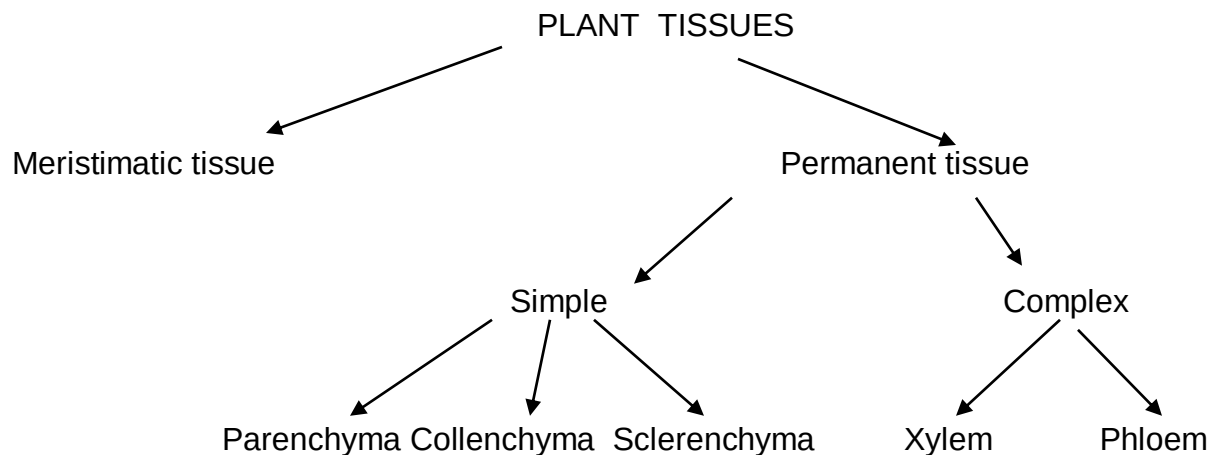
Introduction-. Students would be asked a few questions to review their knowledge about tissues discussed in the previous class –[5 min]

Q1. What is a tissue?

Q2. What is the reserve food for plant tissues?

Q3. What type of structural organization is present in animals?

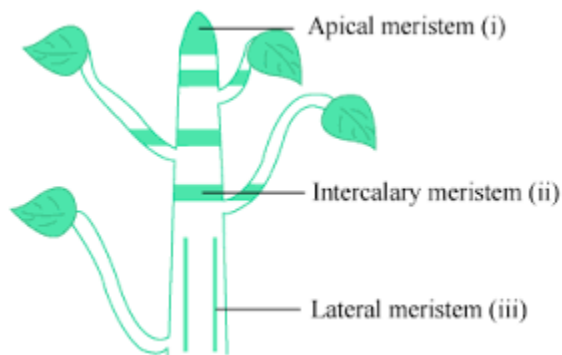
*Students will be classifying plant tissues through a flowchart as-[15 min]



*Characterstics of Mersitematic tissue

*Types of meristematic tissue on the basis of location in the cell-

Apical/ Intercalary/ Lateral meristem-



Thinkline – Q. Can you think why meristematic tissues lack vacuoles? [5 min]

Teaching methodology- discussion through examples from life , lecture method, Question answer through open ended situations

Continued:

Closure-The class would be summarized by-

Q. Classify plant tissues

Q.Characterize meristematic tissue.

Proposed Questions [5 min] Q1.what is the pattern of growth in plants? Q2. Why is the pattern diffused? Q3.Do flowers also develop from meristematic activity?	
Evaluation/Assessment: Oral recapitulation of the topics discussed in the previous class. Asking to summarize to redraw the classification of plant tissue on board using a flowchart.	
Learners on the way *Individual attention within the class. *Extra input time outside the class. *Peer learning through appropriate seating arrangement. Q. Identify some location in plants where undifferentiated cells are present.	Advanced Learners *Assist the peers in comprehending the questions and writing answers with scientific vocabulary. Q. Why do scientist select tissues from shoot tips for experiments on tissue culture?[5 min]
Materials needed/Resources: *Class IX NCERT textbook *Blackboard, chalk	
Common Misconceptions: Usage of incorrect scientific vocabulary. Undifferentiated cells are present only in plants.	Addressing the misconceptions: On discussion key words to be written on the board. Explain the presence of stem cells in our body.

- Home Assignments: Think line question,
Q1. Classify plant tissues through a flowchart.
Q. Enlist characteristics of meristematic tissue and with the help of diagram represent the location of meristematic tissues in plants with their functions.

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Teacher Name	Class	Subject	Time slot	Date	Lesson	Topic
	IX	Biology	35 min. Pd3	May	Tissues	Permanent tissue

Expected Learning Outcome:

- *Differentiate between simple permanent and complex permanent plant tissues.
- *Compare different types of simple permanent tissues- parenchyma, collenchyma and sclerenchyma on the basis of their structure, function and location.

Expected skill development: Reading skills while comprehending the question asked.

- *Comprehension of the text while asking questions and writing answers.
- *Developing scientific vocabulary and its proper usage.
- *Reasoning and analytical skills to correlate structure and function of tissue.
- *Critical thinking through open ended questions and to differentiate between different tissues.

FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

Introduction-. Students would be asked a few questions to review their knowledge about meristematic tissue discussed in the last class –[5 min]

- Q1.Are meristematic tissues differentiated?
- Q2.Enlist characteristics of meristematic tissues?
- Q3. What is the role of lateral meristem in plant growth?
- Q4.Can we remove apical meristem from the plant?
- Q5.Do plants have differentiated tissues?

*Students will be explained the formation of permanent tissue from meristematic tissue.[15 min]

*Compare simple and complex permanent

Simple permanent tissue-

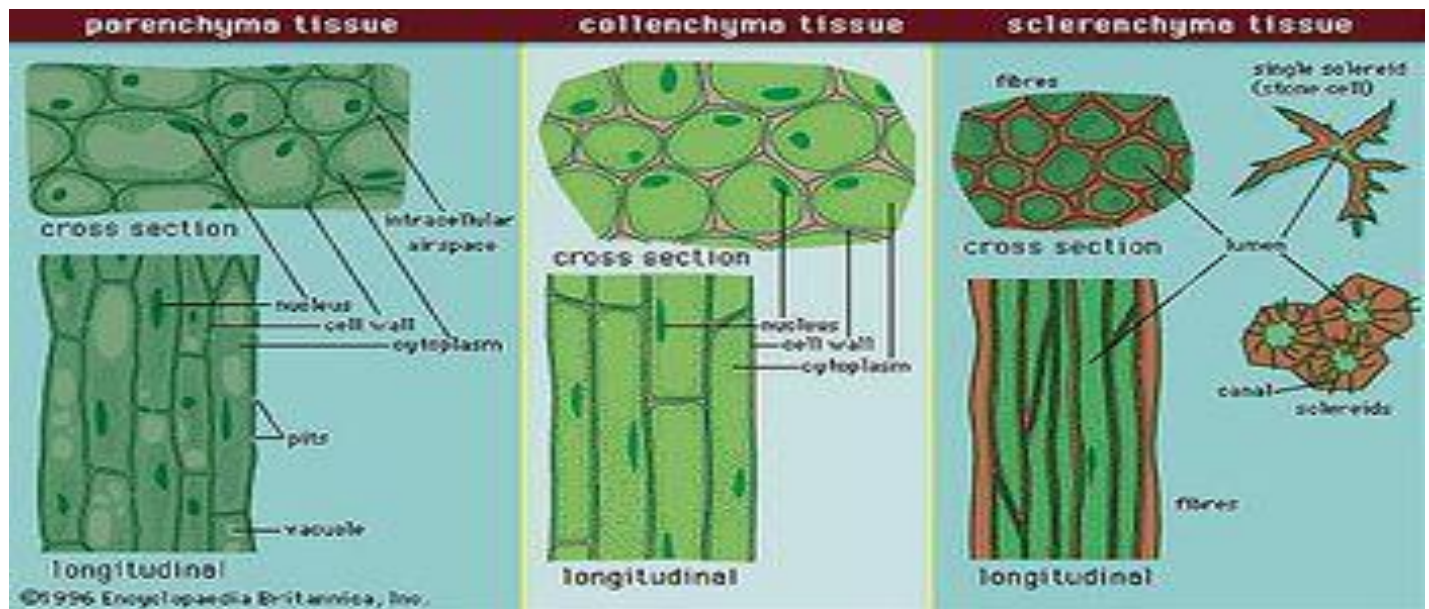
1. Parenchyma

2. Collenchyma

3. Sclerenchyma

Compare them on the basis of (a) structure of cells (b) location in the plant body (c) function.

*modifications of parenchyma- aerenchyma / chlorenchyma



Thinkline – Compare the intercellular spaces in parenchyma, collenchymas and sclerenchyma and co relate it with their function/location?

Teaching methodology- discussion through examples from life, Question answer through open ended situations

Continued:

Closure -The class would be summarized by-

Q classifying plant tissues

Q.Characterize simple permanent tissue.

Proposed Questions [5 min] Q1.Can undifferentiated tissues be converted into permanent tissue? Q2. The husk of coconut is made of which type of permanent tissue? Q3. Aerenchyma is a characterstic feature of which type of plants?	
Evaluation/Assessment: Oral recapitulation of the topics discussed in the previous class. Asking to summarize at the end by comparing simple permanent tissue.	
Learners on the way *Individual attention within the class. *Extra input time outside the class. *Peer learning through appropriate seating arrangement. Q. Which simple permanent tissue in responsible for storage?	Advanced Learners *Assist the peers in comprehending the questions and writing answers with scientific vocabulary.. Q. will the number of sclerenchyma tissue increase with ageing in plants?[5 min]
Materials needed/Resources: *Class IX NCERT textbook *Blackboard, chalk	
Common Misconceptions: Confusion in the angular thickenings and intercellular spaces in the diagram .	Addressing the misconceptions: Draw longitudinal section of the tissue of show the position of angular thickening .

- Home Assignments: Thinkline Question[5 min]
Q. Compare types of simple permanent tissue on the basis of structure, location and function.
NCERT pg no-74-Q3- Q. Which tissue makes up the husk of coconut?

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Teacher Name	Class	Subject	Time slot	Date	Lesson	Topic
	IX	Biology	35 min. Pd4	July	Tissues	Complex permanent tissue

Expected Learning Outcome:

*Compare different types of complex permanent tissues- xylem and phloem on the basis of their types of cells, function and location.

*Differentiate between old stem and young stem on the basis of types of tissues

Expected skill development: * Reading skills while comprehending the question asked.

*Comprehension of the text while asking questions and writing answers.

*Developing scientific vocabulary and it's proper usage.

*Reasoning and analytical skills to correlate structure and function of tissue.

*Critical thinking through open ended questions and to differentiate between different tissues.

FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

Introduction-. Students would be asked a few questions to review their knowledge about complex tissues –[5 min]

Q1.what is a complex permanent tissue?

Q2.How is it different from simple permanent tissue?

Complex permanent tissue- [15 min]

1. Xylem

2. Phloem

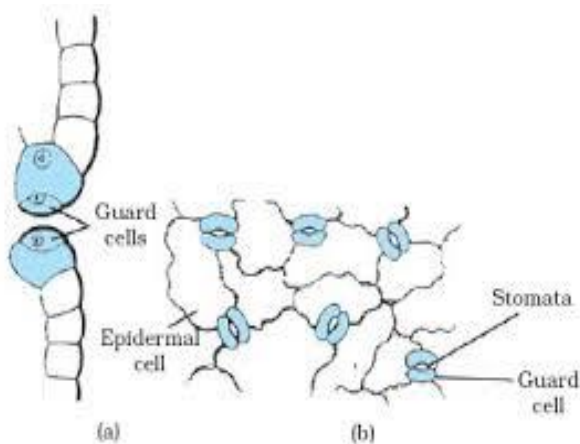
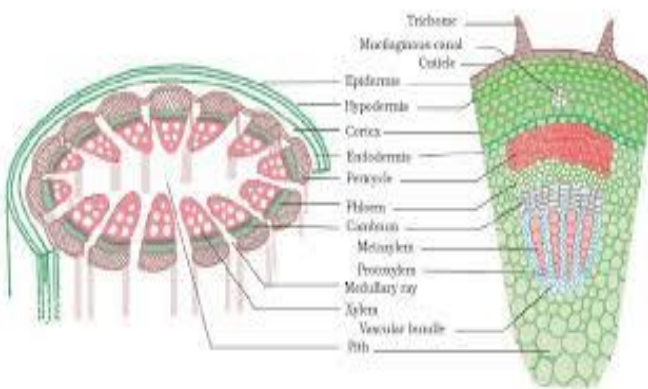
Compare them on the basis of (a) types of cells in them, (b) location in the plant (c) function of each type of cells and function of the entire group of cells.



Figure 3. (a) Xylem (b) Phloem tissues

- **Thinkline** - . How does the cells of epidermis of a young stem change to dead cells of cork in an old stem?.

Comparison of epidermal cells in a young stem and old stem-presence/absence of stomata, cork cells, arrangement of epidermal cells.



Teaching methodology- discussion through examples from life , lecture method, Question answer through open ended situations

Continued:

Closure -The class would be summarized asking students to –

Differentiate the structure and composition of complex permanent plant tissues.

Proposed Questions [5 min] Q1.Sieve tubes are living cells without nucleus. Justify Q2.Compare the functioning of xylem with that of phloem .(c.w) Q3. What is translocation?(c.w)	
Evaluation/Assessment: Oral recapitulation of the topics discussed in the previous class. Asking to summarize by comparing the structure of young and old stem trough value points.	
Learners on the way *Individual attention within the class. *Extra input time outside the class. *Peer learning through appropriate seating arrangement. Q. Are the cells of cork- living/dead?	Advanced Learners *Assist the peers in comprehending the questions and writing answers with scientific vocabulary. Q. Is the outer layer of a branch of tree different from the outer layer of a young stem ?[5 min]
Materials needed/Resources: *Class IX NCERT textbook *Blackboard, chalk	
Common Misconceptions: Sieve tubes are dead cells.	Addressing the misconceptions: While discussion clarify the importance of companion cells with sieve tubes.

- Home Assignments: Thinkline question[5 min]

Pg79 Q5- What are the functions of stomata?

Q13- Q.What is the role of epidermis in plants?

Q14- How does cork act as a protective tissue?

Q. Name the constituents of xylem and phloem

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Teacher Name	Class	Subject	Time slot	Date	Lesson	Topic
	IX	Biology	35 min. Pd5	July	Tissues	Animal tissue- classification, epithelium tissue

Expected Learning Outcome:

- *Identify different types of animal tissues-epithelial, connective, muscular and nervous
- * Classify epithelial tissue on the basis of structure function and location and represent them with diagrams.

Expected skill development: * Reading skills while comprehending the question asked.

*Comprehension of the text while asking questions and writing answers.

*Developing scientific vocabulary and it's proper usage.

*Reasoning and analytical skills to correlate structure and function of tissue.

*Critical thinking through open ended questions and to differentiate between different tissues.

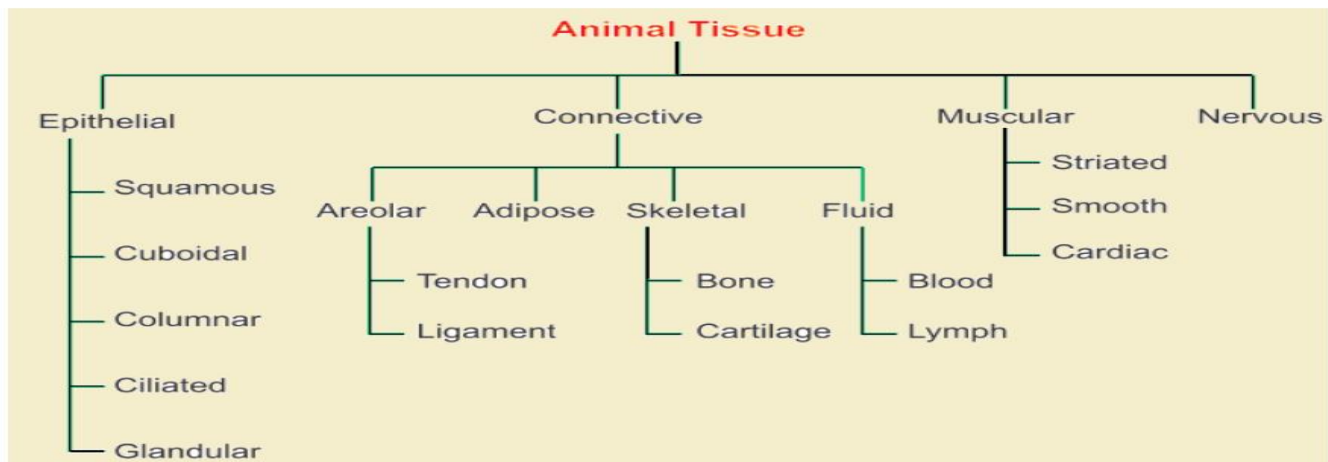
FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

Introduction-. Students would be asked a few questions to review their knowledge about complex tissues discussed in previous class--[5 min]

Q1.How is a complex tissue different from simple permanent tissue?

Q2.Enlist the living components of xylem and phloem.

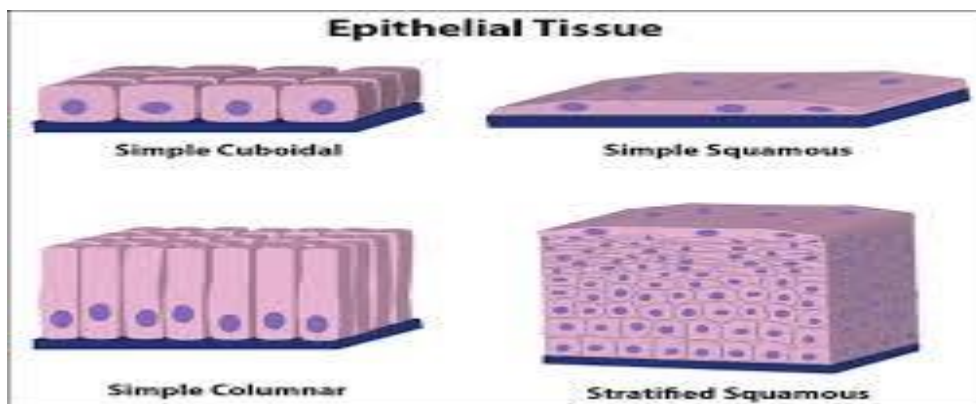
Classification of various types of animal tissues would be discussed in the class through a flowchart explaining from our outer tissue types to the inner ones-[20 min]



1. Epithelium tissue-

The characteristics of epithelium tissue would be discussed along with its classification and diagram representation of each type.

Thinkline-Can we have a similar type of epithelium in all the parts of our body? Why?



Each type would be discussed on the basis of its structure, function and location in the body.

Thinkline- Why does the lining of blood vessels have simple squamous epithelium?

Continued:

Closure-The class would be summarized asking students to-

Q. Classify animal tissues and compare various types of epithelium tissue.

Proposed Questions [5 min] Q3. What are the various types of tissues in animals? Q4. Squamous epithelium is located in which part of your body? Q5. What is the importance of basement membrane for an epithelium tissue?	
Evaluation/Assessment: Oral recapitulation of the topics discussed in the previous class. Asking to classify animal tissues using a flowchart	
Learners on the way *Individual attention within the class. *Extra input time outside the class. *Peer learning through appropriate seating arrangement. Q. Your skin is made up of which type of epithelium?	Advanced Learners *Assist the peers in comprehending the questions and writing answers with scientific vocabulary. Q. Find out the various types of tissues present in your skin?.
Materials needed/Resources: *Class IX NCERT textbook *Blackboard, chalk	
Common Misconceptions: Epidermis and epithelium are same.	Addressing the misconceptions: While discussion clarify the concept of epithelium and epidermis.

- Home Assignments: [5 min]

Q. Classify animal tissues using a flow chart

Q .Enlist characteristic features of epithelium tissue and identify their types at following places in your body-

a) In respiratory tract

b) Inner lining of kidney tubules.

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Teacher Name	Class	Subject	Time slot	Date	Lesson	Topic
	IX	Biology	35 min. Pd6	July	Tissues	Animal tissue- connective tissue

Expected Learning Outcome:

* Identify various types of connective tissues in our body and classify on the basis of structure, function and location and represent them with diagrams.

Expected skill development: * Reading skills while comprehending the question asked.

* Comprehension of the text while asking questions and writing answers.

* Developing scientific vocabulary and its proper usage.

* Reasoning and analytical skills to correlate structure and function of tissue.

* Critical thinking through open ended questions and to differentiate between different tissues.

FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

Introduction-. Students would be asked a few questions to review their knowledge about epithelium tissue discussed in previous class-[5 min]

Q1.What are the different types of epithelium tissue?

Q2.The cuboidal epithelium is located in which part of your body?.

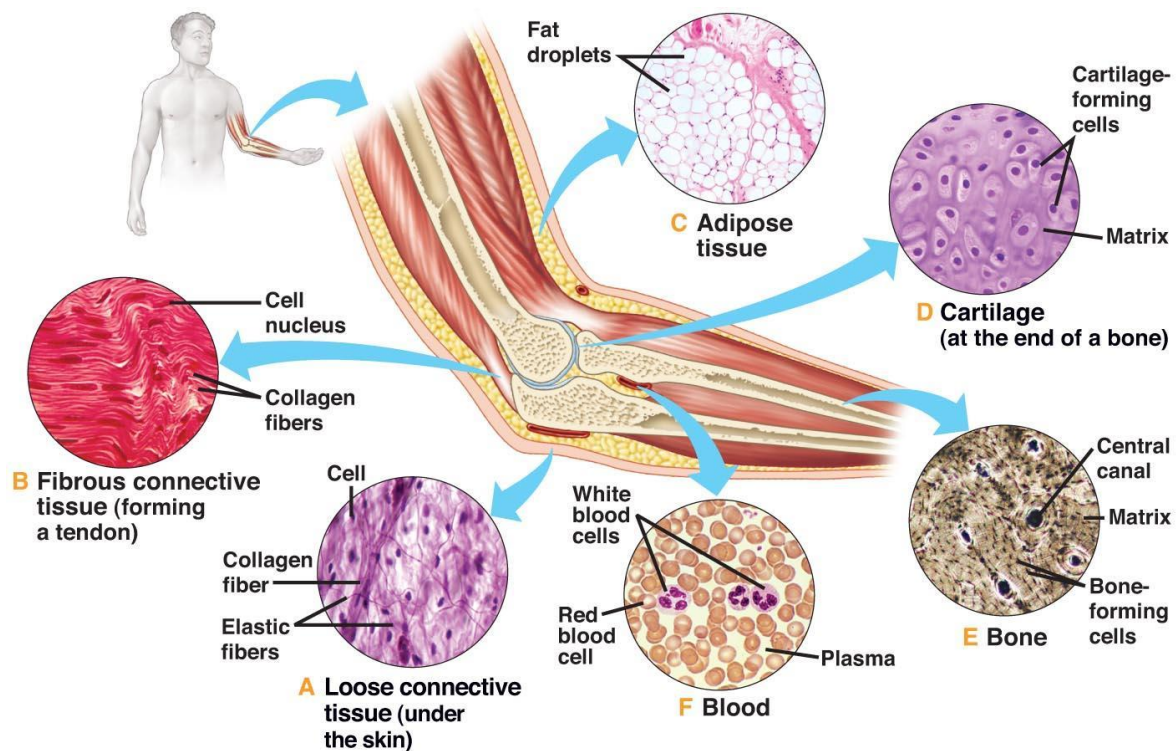
Q3. The glandular tissue is a modification of which type of epithelium tissue ?

Classification of various types of connective tissues would be discussed in the class –[15 min]

2. Connective tissue-

The characteristics of connective tissue would be discussed along with its classification and diagram representation of each type.

Each type would be discussed on the basis of its structure/composition of cells (type of matrix, cells, fibre), function and location in the body. (SEE, THINK, Wonder....)



Thinkline - Correlate the characters of bone with the functions of bone.

Teaching methodology- discussion through examples from life , lecture method, Question answer through open ended situations

Continued:

Closure-The class would be summarized asking students to-

Q. Classify connective tissue

Q. Identify the connective tissue at the following locations-

a) around soft organs

b) Between two bones

c) below skin

- Proposed Questions [5 min]

Q4. Compare cartilage and bone on the basis of type of cells/matrix/ presence of canal with diagrams?(c.w)

Q5. Tendons and ligaments are examples of which type of connective tissue?

- Evaluation/Assessment:

Oral recapitulation of the topics discussed in the previous class.

Asking to summarize at the end of each topic

Learners on the way	Advanced Learners
*Individual attention within the class. *Extra input time outside the class. *Peer learning through appropriate seating arrangement. Q. Identify the functions of areolar tissue?	*Assist the peers in comprehending the questions and writing answers with scientific vocabulary. Q. Areolar tissue acts as filling tissue in the organs. justify .[5 min]

Materials needed/Resources:

*Class IX NCERT textbook

*Blackboard, chalk

Common Misconceptions:

*Blood and bone are not a tissue.

*The plasma of blood is also red in colour..

Addressing the misconceptions:

While discussion clarify the concept of blood and bones as tissues.

- Home Assignments: [5 min]

Q. Classify connective tissue using a flow chart

Q .Enlist characteristic features of connective tissue and compare the following tissues –

- a) Areolar and adipose
- b) Tendons and ligaments

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Teacher Name	Class	Subject	Time slot	Date	Lesson	Topic
	IX	Biology	35 min. Pd7	July	Tissues	Animal tissue- muscular tissue

Expected Learning Outcome:

Compare the working and location of striated, unstriated and cardiac muscles in various parts of the body and represent them with diagrams.

Expected skill development:* Reading skills while comprehending the question asked.

*Comprehension of the text while asking questions and writing answers.

*Developing scientific vocabulary and it's proper usage.

*Reasoning and analytical skills to correlate structure and function of tissue.

*Critical thinking through open ended questions and to differentiate between different tissues.

FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

Introduction-. Students would be asked a few questions to review their knowledge about connective tissues discussed in the previous class–[5 min]

Q1.Enlist various types of connective tissue in your body?

Q2.Distinguish between bone and cartilage on the basis of type of cells .

Comparisn of various types of muscles on basis of their structure, function and location in the body.[15 min]

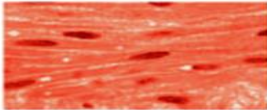
(The students would compare the function and location on their own)

Muscular tissue-

The characteristics of muscular tissue would be discussed along with its various types and diagram representation of each type.

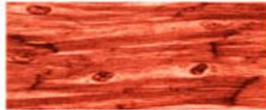
Each type would be discussed on the basis of its structure, function and location in the body.

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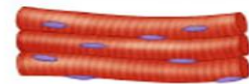
Smooth muscle

- has spindle-shaped, nonstriated uninucleated fibers.
- occurs in walls of internal organs.
- is involuntary.



Cardiac muscle

- has striated, branched, uninucleated fibers.
- occurs in walls of heart.
- is involuntary.



Skeletal muscle

- has striated, tubular, multinucleated fibers.
- is usually attached to skeleton.
- is voluntary.

Thinkline- Why are cardiac muscles involuntary in nature?[5 min]

Q. Why are smooth muscles called as unstriated?(c.w)

Q. Do cardiac muscles ever show fatigue?

Teaching methodology- discussion through examples from life , lecture method, Question answer through open ended situations

Continued:

Closure-The class would be summarized asking students to-

Q. compare various types of muscle tissues.

Proposed Questions [5 min] Q3. Do you similar muscles in your hand and heart? Q4. Why are striated muscles called as skeletal muscles?(c.w) Q5. Which muscles pain after vigorous exercise?	
Evaluation/Assessment: Oral recapitulation of the topics discussed in the previous class. Asking to compare the types of muscle tissue in a tabular form.	
Learners on the way *Individual attention within the class. *Extra input time outside the class. *Peer learning through appropriate seating arrangement. *Identify features of cardiac muscles?	Advanced Learners *Assist the peers in comprehending the questions and writing answers with scientific vocabulary. *why do cardiac muscles show presence of intercalated discs?.
Materials needed/Resources: *Class IX NCERT textbook *Blackboard, chalk * Slides of striated, Unstriated muscle	
Common Misconceptions: Muscles are only attached with your skeletal system. Muscles are mostly voluntary in nature.	Addressing the misconceptions: Discuss smooth muscles.

- Home Assignments: [5 min]
Q. Compare muscles of hand, stomach and heart on the basis of their structure(shape/number of nuclei/presence of striations) and function.
NCERT pg -79, Q7. What are the specific functions of cardiac muscles?

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Teacher Name	Class	Subject	Time slot	Date	Lesson	Topic
	IX	Biology	35 min. Pd8	July	Tissues	Animal tissue- nervous system

Expected Learning Outcome:

Acknowledge the structure and function of a neuron with a well labeled diagram.

Expected skill development: * Reading skills while comprehending the question asked.

*Comprehension of the text while asking questions and writing answers.

*Developing scientific vocabulary and its proper usage.

*Reasoning and analytical skills to correlate structure and function of tissue.

*Critical thinking through open ended questions and to differentiate between different tissues.

FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

Introduction-. Students would be asked a few questions to review their knowledge about muscular tissues discussed in the previous class--[5 min]

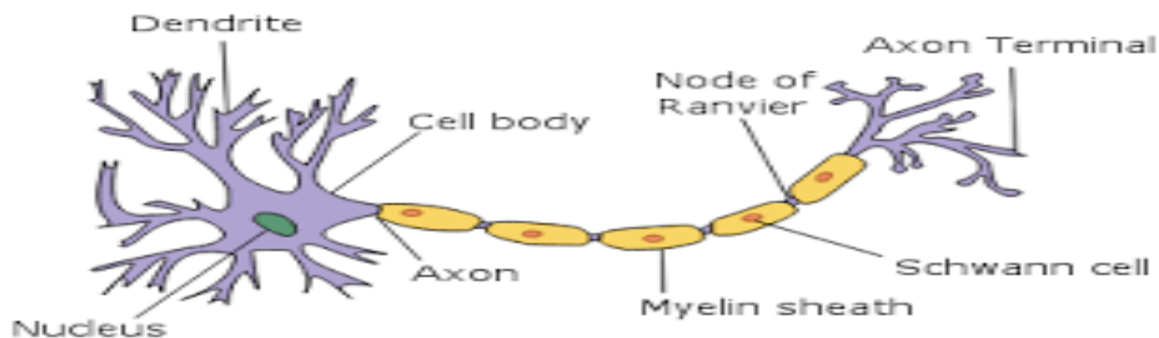
Q1. Enlist various types of muscles in your body?

Q2.Distinguish between cardiac and striated muscles on the basis of number of nuclei

Nervous tissue --[15 min]

*Discussion of structure of a neuron through a well labeled diagram.

Neuron-----nerve----nervous tissue



*Difference between sensory and motor neurons.

Thinkline- Compare the number of mitochondria in a nerve cell with the cells of epithelium tissue.

Teaching methodology- discussion through examples from life , lecture method, Question answer through open ended situations

.Continued:

Closure-The class would be summarized asking students –

Q. Draw the structure of animal nervous tissues

Q. compare sensory and motor neurons.

- Proposed Questions [5 min] . - Q3. How does message reach from one part of body to another? - Q4. Which part of neuron is responsible for receiving message? - Q5. The sensory neurons take messages from which part of your body?	
Evaluation/Assessment: Oral recapitulation of the topics discussed in the previous class. Asking to summarize by drawing the diagram of nerve cell on the board.	
Learners on the way	Advanced Learners *Assist the peers in comprehending the

*Individual attention within the class. *Extra input time outside the class. *Peer learning through appropriate seating arrangement. Q.Why is neuron the longest cell of our body?	questions and writing answers with scientific vocabulary. Q. Find out advantage of having a myelin sheath in a neuron ?.
Materials needed/Resources: *Class IX NCERT textbook *Blackboard, chalk * Slide of a neuron	
Common Misconceptions: Neurons only take message from sense organs to brain	Addressing the misconceptions: Neurons can be sensory as well as motor.

- Home Assignments: [5 min]
NCERT pg -79, Q9- Draw a labeled diagram of neuron?
Q10. Name the following-
 - Tissue that forms the inner lining of the mouth
 - Tissue that connects the muscles to bone in humans
 - Tissue that transports food in plants
 - Tissue that stores fat in our body
 - Connective tissue with a fluid matrix
 - Tissue present in brain
Q11. Identify the type of tissue in the following: skin, bark of tree, bone, lining of kidney tubule, vascular bundle.