

## Model Lesson Plan – Biology

**Teacher's Name:** xxxx  
**Class:** xxxx

**Date:** xxxx  
**Section:** xxx

**Subject:** Biology  
**Period:** xxxx

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**Unit:** Life Process

**Sub Topic:** Structure and Function of the Heart

**Learning Points:**

- : External Features of the Heart
- : Internal Structure and Functions of the Heart
- : Arteries and Veins associated with the Heart

**Teaching-Learning Objectives: After teaching the students will be able to**

➤ **Knowledge:**

- The pupil recalls Human Heart is four Chambered Heart.
- The Pupil recognises the shape of the Human heart.
- The pupil recalls the functions the arteries and veins.

➤ **Comprehension: Comprehend**

- The pupil explains the structure of Human heart with the help of Chart.
- The pupil identifies the different parts of the Heart.
- The pupil describes the structure and function of Human heart.
- The pupil differentiates the structure and function of Left and Right part of the Heart.
- The pupil explains the role of Bicuspid and Tricuspid valves in preventing the backflow of blood from ventricles to Auricles.

➤ **Application: Apply:**

The pupil analyses the different parts of the Heart.

The pupil gives reason for not mixing the pure and impure blood in the heart.

The pupil concludes that the only artery carries impure blood is Pulmonary artery and the only vein carries pure blood is pulmonary veins.

The pupil predicts the reason to call Sino auricular node as pace maker.

➤ **Skills: Develop skills like,**

The pupil carefully observes the diagram of the heart.

The pupil draws a neat labelled diagram of Human Heart.

The pupil correctly identifies the different parts of the Heart.

**Teaching Learning Resources:** Charts showing vertical section of Human Heart, Video showing location, Structure and function of Heart, video of Blood flow and Heart Beat, Model of Heart, Work sheets etc)

**Method and Approaches:** Structural – Functional Approach, Lecture cum discussion, Inductive approach, Co-operative learning approach, Experiential Learning, Multi-media approach etc)

|          |  | <b>Teaching Learning Experiences</b>  | <b>Specifications of Learning process</b>  |
|----------|--|---|--|
| Phase I: | <b>Foundation / Stimulation and activation</b> | Teacher after making an introductory statement, asks questions related to structure and function of cell, tissue and organs in our body.<br>By having eliciting different organ systems, teacher provides worksheet to match different organs to its respective organ system. | Recalls and recognises the structure and function of different cells, tissues and organs |

|         |   |   |   |
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| Phase 2 | <b>Introducing and presenting New Information</b> | <p>Learning points will be presented in the following ways to make them learn.</p> <p>Statement of the Aim: In today's class let us learn about the Structure and Function of the Heart in order to understand the circulatory system in Man.</p> <p>Now let us discuss about the structure and function of heart.</p> <p>The learning points which we are going to learn:</p> <ul style="list-style-type: none"> <li>➤ Meaning of Heart</li> <li>➤ External Features of Heart</li> <li>➤ Internal structure and its parts</li> <li>➤ Function of Heart</li> <li>➤ Blood vessels- Arteries and Veins associated to heart and their function</li> </ul>  | Identifies the learning points and analyses its relationship  |
| Phase 3 | <b>Clarification of the points presented</b>      | <p>Teacher provides learning experiences and clarification of the following learning points by using appropriate explanation, Questions, Visual aids- Charts, Videos, activities and worksheets.</p> <ul style="list-style-type: none"> <li>➤ Meaning of Heart: Heart is a double pumping muscular organ situated in between lungs and covered by fluid filled pericardial membrane.</li> <li>➤ External Features of Heart: Its size is about the fist and weighs around 300 grams.</li> <li>➤ Internal structure and its parts: basically it consists of two parts: left part and right part. Left part consists of left atrium and left ventricle, it collects and pumps oxygenated blood or pure blood, whereas right part consists of Right atrium and right ventricle, it collects and pumps deoxygenated or impure blood.</li> <li>➤ Blood vessels- Arteries and Veins associated to heart and their function: Aorta originates from left ventricle and carries pure blood to different parts of the body. Pulmonary artery carries impure blood to lungs for purification, which originates from right ventricle. Pulmonary veins brings pure blood from lungs to right atrium and Superior and inferior vena cava brings</li> </ul> | Clarifies the doubts if any through questioning and constructs their knowledge by participating in the provided activities. |

|         |   |   |   |
|---------|---|---|---|
|         |   | <p>impure blood to right atrium.</p> <p>➤ Valves of Heart: Bicuspid valve present in between Left Atrium and right ventricle and Tricuspid valve is present in between right atrium and right ventricle. Both these valves prevents backflow of blood from ventricles to atrium.</p>  |   |
| Phase 4 | <b>Practice / Review and Independent Practice</b> | <p>Teacher explains additional information by referring to unique features in structure and function of heart in order to develop clarity in learning. Shows video and asks following questions:</p> <ul style="list-style-type: none"> <li>• What happens if the walls of ventricles are made up of thin muscular layer?</li> <li>• What happens, if valves allow back flow of blood?</li> <li>• How do heart beat happens?</li> <li>• What is the distinct feature of pulmonary artery and pulmonary veins?</li> <li>• What if heart is not supplied with oxygenated blood?</li> <li>•</li> </ul> | Perceives additional information by providing responses to higher level questions and also comes to an generalisation by having discussion among group members. |
| Phase 5 | <b>Closure</b>                                    | Concludes the learning points and summarises the learning aspects through activities like function of pericardial membrane and fluid, writing and labelling the structure of heart etc. and encourages students to ask doubts and responds through appropriate media to provide responses for each student.   | Participates in the discussion and analyses the content learnt. Provides appropriate responses.   |
| Phase 6 | Assign follow up activities                       | <p>The following activity will be given:</p> <p>Write a neat labelled diagram of Heart. Explain how do heart maintain its rhythmic heart beat throughout the life of an individual. (In the next class, reviews the follow up activity and uses this knowledge to provide feedback on their learning)</p>   | Applies learnt knowled.ge in completing the given task  |

## Unit Test in Biology for 14 items and 25 Marks

| Sl No | Type of Questions<br>→<br>Objectives ↓ | Short Essay Type Questions | Short Answer Type Questions | Objective Questions | Total Marks | %           |
|-------|--|----------------------------|-----------------------------|---------------------|-------------|-------------|
| 1     | Knowledge                              |                            | 1 (2)                       | 4(1)                | 5           | 20%         |
| 2     | Understanding                          | 1(4)                       | 1 (2)                       | 1(1)                | 8           | 32%         |
| 3     | Application                            |                            | 2 (2)                       | 3(1)                | 7           | 28%         |
| 4     | Skill                                  | 1(4)                       |                             | -                   | 5           | 20%         |
|       | <b>Total</b>                           | <b>2(8)</b>                | <b>4(8)</b>                 | <b>8(8)</b>         | <b>25</b>   | <b>100%</b> |

Knowledge:20%, Understanding-30% Application 30% Skill-20%

**Note: The number inside the bracket indicates marks**

**Number outside the bracket indicates items or questions**

## Guidelines to Prepare Test Items:

1. All questions shall be Objective type questions
2. A total of 50 questions need to be prepared
3. Indicate the Objective, Question and Answer for each item.(Objective should be decided according to the objectives of each subject. Science: Understanding, Application, Analysis, Skill etc; Language: Comprehension, Skills, Vocabulary etc)
4. The questions shall be of any one type out of the 5 types given below. Each type should have a minimum of 6 questions. (Completion, Matching, Multiple Choice, Sequential Arrangement, Classification, True-False Type)
5. See that the questions belong to a single subject (History, Civics, Geography, Physics, Arithmetic etc)
6. Let the instruction for each type of item be very clear. Let the instruction involve two parts-what is given in the question and what is expected of students.
7. Present same type of questions under a single heading.

Examples:

### I. Completion Type Questions:

**Objective: Recalling the artery carrying pure blood**

**Instruction:** Below are given incomplete statements. Complete them using appropriate answers.

- **The only artery carries deoxygenated blood is \_\_\_\_\_**

**Answer: Pulmonary artery**

## II. Matching Type Questions

**Objective:** Identification of digestive juices to its glands

**Instruction:** Below are given the name of the digestive juices in List 'A' and the glands which they secrete in List 'B'. Match the digestive juices to its glands

|   | List 'A'         | List 'B'        |   |
|---|------------------|-----------------|---|
| 1 | Salivary juice   | Liver           | a |
| 2 | Bile juice       | Salivary glands | b |
| 3 | Gastric Juice    | Pancreas        | c |
| 4 | Pancreatic juice | Stomach         | d |

**Answer:** 1-b,2-a,3-d,4-c

## III. Multiple Choice Questions

**Objective:** gives reason

**Instruction:** Below are given incomplete statements followed by four choices. Indicate the best answer to complete the statement using '✓'

- The prevention of backflow of blood inside the heart during contraction is due to the
  - A. Thick muscular walls of ventricle
  - B. Thin walls of atria
  - C. Valves presence in the heart
  - D. Sino auricular node

**Answer:** C. Valves presence in the Heart

#### **IV. Sequential Arrangement of Items**

**Objective: judges**

**Instruction:** Below are given the name of organisms which are required to complete the food chain. Arrange them in appropriate sequence.

- Frog, Grasshopper, Snake, Grass, Eagle

**Answer:** Grass- Grasshopper- Frog- Snake- Eagle

#### **V. Classification Items**

**Objective: Differentiation**

**Below are given some parts of Brain. Identify the one which does not belong to it**

- A. Cerebrum
- B. Medulla
- C. Cortex
- D. Cerebellum

**Answer:** C .Cortex is a part of Kidney

**Or**

**Below are given a pair of words in the first part. Identify the word that fits the second word out of the choices followed by the question**

**Objective: Analysis**

- Water: Hydrotropism:: Light:\_\_\_\_\_
- (Chemotropism, Geotropism, Phototropism, Thigmotropism)

**Answer:** Phototropism

## VI. True/False Items

**Objective:** recalling

**Instruction:** Below are given some statements related to physiological systems of living organisms. Identify the statements whether true or false.

- Xylem is a food conducting tissue  
**Answer:** False, it is water conducting tissue.