Organs or Respiration in animals

Concepts:

- Respiration through skin is called cutaneous - respiration.
- Respiration through trachea is called tracheal - respiration. Ex: Insects
- Respiration through gills is called branchial respiration. Ex: Fish, Prawn, Jardpole.
- Respiration through Lungs is called pulmonary - respiration. Ex: Amphibians, Reptiles, Aves & mammals.
- During summer months, when it is hot and dry, frogs make burrows deep into the soil and live in burrows. This is called aestivation or summer sleep.
- **Winter sleep/Hibernation:** During several winter months when temperature is too less frog makes burrows deep into soil and live in the burrows. This is called winter sleep or Hibernation.
- **Ex O skeleton:** Insects have a thick, hard impervious covering called cuticle which serves as a skeleton and it called as exoskeleton.
- Respiration systems of fish is consist of three parts. They are 1) internal branchial aperture, gill pouch and external branchial aperture.
- **Operculum:** In some fishes gills are covered by a skin folding know as operculum. Ex: Teleost / Bony fishes.
- Flow of waer in a fish during respirations - water from out side → months → oral cavity pharynx → internal branchial aperture → Gill pouch → External brachial aperture → out side.
- **Palate:** A bony plate which separates nasal cavities and oral cavity is called palate.
- **Alveoli:** The structural and functional unit of lungs are called alveoli or airsacs.
- **Mechanism of Respiration:** Consist of two phases called 1) inspiration / inhalation. 2) Expiration / Exhalation.

Rate of Respiration in different groups of human beings
- New born child → 32 times per minute
- Children of 5 years → 26 times per minute
- Man of 25 years →15 times per minute
- Man of 50 years → 18 times per minute

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Name of the animal</th>
<th>Name of the Respiratory organ</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Unicellulars like amoeba, Euglena</td>
<td>Body surface</td>
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<tr>
<td>2.</td>
<td>Earthworm</td>
<td>skin</td>
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<td>3.</td>
<td>Leech</td>
<td>skin</td>
</tr>
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<td>4.</td>
<td>Insects</td>
<td>Trachea</td>
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<td>5.</td>
<td>Fish</td>
<td>Gills</td>
</tr>
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<td>6.</td>
<td>Prawn</td>
<td>Gills</td>
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<td>7.</td>
<td>Frog</td>
<td>Skin &amp; Lungs</td>
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<tr>
<td>8.</td>
<td>Reptiles, Aves &amp; Mammals</td>
<td>Lungs</td>
</tr>
</tbody>
</table>
1 Mark Questions

1. What is corelome?
   A. The body of earthworm has space between body wall and alimentary canal called body cavity or coelome.

2. What is Aestivation and hibernation?
   A. During summer months when it is hot and dry frogs makes burrows in the deeper layers of the soil. This is called Aestivation or summer sleep.
   B. During Severe winter season the frog makes burrows in the deeper layers of soil to protect cold from the body thin time period in call hibernation/winter sleep.

3. What is Exoskeleton?
   A. Insects have a thick, hard impervious covering called cuticle which serve as a skeleton and it is called exoskeleton.

4. What is alveoli?
   A. The structural and functional unit of lungs is called alveoli.

5. What is inspiration?
   A. In take of oxygen is called inspiration or inhalation.

6. What is meant by diffusion?
   A. The movement ions or particles from higher concentration to lower concentration till the concentration becomes equal this process is called diffusion.

7. What is Palate?
   A. Nasal cavities and oral cavity is seperated by a bony plate called palate.

8. How trachea is prevented from collapsing?
   A. The inner walls of Trachea is supported by a 'C' shaped rings called cartilagenoun rings. These are helps in prevent and collapsing the trachea.

9. What is pleura?
   A. Lungs are enclosed with double layers called pleura.

10. What is Eouglothis?
    A. Pharynx is into Larynx through a shit like opening called epiglothis.

2 Marks Questions

1. Describe the respiratory system in Fishes?
   A. The Respiratory system of fish is consist of three parts they are -
      1. Internal branchial aperture.
      2. Gill Pouches
      3. External Branchial Aperture
      - Mouth is open to oral cavity, it is open into Pharynx
      - Pharynx is open into internal branchial aperture in between internal branchial aperture and external brachial aperture there a sac like structure called gill pouch.
      - Gill pouch consist of leaf like structures

2. Write briefly about pharynx?
   A. Pharynx is a muscular chamber. It is a common passage for air and food.
Pharynx is open into larynx through a slit like opening called glottis. Glottis is covered by a lid like structure called epiglottis. Epiglottis prevent the entry of food into lungs and prevent entry of air into stomach.

4 Marks Questions

1. Describe the tracheal system of cockroach?
A. Respiratory through trachea is called tracheal respiration. Ex: Cockroach
   - In Cockroach trachea is open into outside through to pairs of apertures known as spiracle or stigmata.
   - Each spiracle is open into a chamber called atrium.
   - Atrium is open into a longitudinal structure called longitudinal tracheal trunk.
   - Tracholes are penetrate into cells or muscles or tissues.
   - When air goes to cells it recieves oxygen and leave out carbon dioxide.

2. Describe Human lungs?
A. In Human beings there is a pair of lungs present in one on either side of the heart in chest cavity or thoracic cavity
   - Lungs are covered by double membrane called pleura. The space present between pleura is called pleural space, and it filled with fluid.
   - Right Lung is bigger than left lung and it is consist of three lobes while left lung is consist of two lobes.
   - Lungs are made up of sponge tissue hence it has elastic in nature.
   - Inside the lungs there are thousand of sac like structures which are filled with air called alveoli.
   - Alveoli is a structural and functional unit of lungs.
3. Explain the mechanism of human Respiration?
   A. Mechanism of Respiration is consist of two phases they are inspiration and expiration.
      - **Inspiration**: Intake of O₂ is called inspiration or inhalation.
      - During Inspiration air from outside enter into lungs.
      - This is brought out by increasing the volume of chest cavity. The volume of chest cavity increases due to pulling down the diaphragm and moving the ribs forward direction. As a result air side the air enter into lungs.
      - **Expiration**: The releasing of CO₂ from the lungs is called expiration or exhalation.
      - In this stage diaphragm and ribs came back to original position. This reduce the volume of thoracic cavity. So the volume in the lungs decreases and the air in lungs under pressure in the lungs rushes out of lungs.

4. What are the differences between external and internal Respiration? (V.V.Imp)
   A. | **External Respiration** | **Internal Respiration** |
      | 1. External respiration is the exchange of gases (O₂, CO₂) between lungs and blood. | 1. Internal respiration is the exchange of gases between blood and tissues. |
      | 2. During external respiration oxygen enters the blood and CO₂ leaves blood is called external respiration. | 2. During internal respiration O₂ carried by the blood diffuses into tissues and CO₂ leaves tissues and diffuses into the blood is called internal respiration. |
      | 3. It is the first stage of respiration. | 3. It is the second stage of respiration. |
      | 4. It has two stages called 1) Inspiration 2) Expiration | 4. It has no substages. |
      | 5. O₂ enters the blood from the external source (Air/water) | 5. Tissues observe O₂ from blood. |
      | 6. CO₂ leaves the tissues and enter into outside. | 6. CO₂ leaves the tissues and enter into blood. |
5 Marks Questions

1. Human Lungs

Choose the correct Answers

1. Single celled organism takes in oxygen from
   a) air          b) soil
   c) water       d) Both air & water

2. Respiratory organs in house fly are
   a) Gills       b) Lungs
   c) Trachea     d) Skin

3. Cutaneous respiration occurs in
   a) Frog        b) Salamander
   c) Earthworm   d) All the above

4. Respiratory organ in scorpion is
   a) Lungs       b) Book Lungs
   c) Trachea     d) Skin

5. Operculum is present in:
   a) Teleost fish b) Elasmo brach fish
   c) Bony fish    d) a & c.

6. Exoskeleton is occurs in the followings:
   a) insects     b) Frog
   c) Fish        d) Man

7. Intake of oxygen is called
   a) Inspiration  b) Expiration
   c) Inhalation   d) B & C

8. Malphigian tubules are found in
   a) Housefly     b) Cockroach
   c) Mosquito     d) All the above

9. The rate of respiration per minute of a new born child is
   a) 18 times     b) 32 times
10. Terrstrail animals take in oxygen from:
   a) Pond
   b) river
   c) Air
   d) Sea

KEY

Fill up the blanks
1. Respiration in amoeba occurs by ______
2. Dorsal pores occur in ______
3. Alveoli are the units of ______
4. In cockroach stigmata are associated with ______ system.
5. In frog, nostrils open into ______
6. 'C' shaped cartilagenous rings are present ______ of man.
7. In man epiglothis covers ______ as a lid.
8. Pleura surround and protect the ______
9. During hiberation, a frog ______ through skin.
10. In earth worm haemoglobin is present in ______

KEY
1. Diffusion
2. Earthworm
3. Lungs
4. Respiratory
5. Oral Cavity
6. Trachea
7. Glott's
8. Lungs
9. Respires
10. Plasma

Match the following
Set - I

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Elasmobrachs</td>
<td>( ) a) Exchange of gases</td>
</tr>
<tr>
<td>2. Opereculum</td>
<td>( ) b) Palate</td>
</tr>
<tr>
<td>3. Alveoli</td>
<td>( ) c) Stigmata</td>
</tr>
<tr>
<td>4. Human beings</td>
<td>( ) d) Cartilaginous fishes</td>
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<tr>
<td>5. Cockroach</td>
<td>( ) e) Bony fishes</td>
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<tr>
<td></td>
<td>f) Stomata</td>
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<td></td>
<td>g) Guard Cells.</td>
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Set - II

**Group A**
1. Respiration in Amoeba
2. Aestivation
3. Salamander
4. Larynx
5. New born Child

**Group B**
1. ( ) a) Voice box
2. ( ) b) 32 times
3. ( ) c) 26 times
4. ( ) d) Winter Sleep
5. ( ) e) Amphibian
   f) Summer Sleep
   g) Diffusion

**KEY**

**Set - I**

**Set - II**