Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (Second Year)

Subject: Zoology

Paper Code: ZOC 103

Paper Title: Anatomy of Animal Body Systems

Unit: 03

Module Name: Dentition-Part I

Module No: 31

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NOTES:

- **DENTITION:** Dentition can be defined as the structure, number and arrangement of teeth in the upper and lower jaws.

- **FUNCTIONS OF TEETH:** The main functions of teeth include grasping food, grinding the food and they may also be used as organs of defense.

- **SIGNIFICANCE OF DENTITION:** The study on dentition helps with the taxonomic work on mammals. The number of teeth present can also help to find the approximate age of an animal. Dentition can also help in deciding the pedigree or ancestry of an animal.
- **EPIDERMAL TEETH:** Not all animals possess true teeth. Animals such as cyclostomes (jawless fishes) and duck-billed platypus show the presence of epidermal teeth. They are hard conical structures present above a dermal papilla.

STRUCTURE OF A TOOTH: The basic structure of a tooth is similar in all vertebrates. A tooth mainly has three main regions or parts:

1. **CROWN** – The part of the tooth that projects out from the gum.
2. **NECK** – Junction or the region between the crown and the root.

3. **ROOT** – The region that is embedded in the alveolus (socket) of the jaw bone.

The various layers in a typical tooth are the enamel, dentine, cement and the pulp cavity.

1. **Enamel-** The outermost layer is the enamel and it is the hardest tissue in the body. It covers the crown region externally.
2. **Cement-** The root of a tooth is attached to the jaw bone by a layer of hard material termed as the cement.
3. **Dentine-** It is a layer of mineralized tissue present just below the enamel.
4. **Pulp cavity-** The innermost layer is the pulp cavity. It is the space present inside the crown that contains the pulp (blood vessels and nerves). The pulp cavity is lined by a layer of cells called the odontoblast cells.

TYPES OF PULP CAVITY: 1. OPEN ROOTED

2. CLOSED ROOTED

- **OPEN ROOTED**: If the pulp cavity remains open basally, then the tooth continues to grow throughout its life and it is termed as open-rooted. E.g. Incisors of rodents and elephants.

- **CLOSE ROOTED**: If the basal region of the pulp cavity is closed, then it is termed as close rooted. E.g. Human tooth.

TYPES OF DENTITION:

Dentition can be classification based on the:

1. **Shape and size of the teeth**
2. **According to the mode of attachment of teeth**
3. **According to succession of teeth**

1. **SHAPE AND SIZE OF TEETH:** Based on the shape and size, teeth can be differentiated into two types, homodont and Heterodont.
   - **HOMODONT (ISODONT**): All the teeth are similar in shape and size. The number of teeth in these organisms can vary from two to two hundred. E.g. Porpoises, armadillos, dolphins.
   - **HETERODONT:** Teeth differ in shape, size and function. Animals that show Heterodont type of dentition usually have four kinds of teeth i.e. incisors, canines, premolars and molars. E.g. mammals.

2. **ATTACHMENT OF TEETH**: They can be classified as Acrodont, pleurodont and thecodont type based on the attachment of the teeth to the jaw bone. Acrodont and pleurodont type of teeth are rootless i.e. the nerves and the blood vessels enter the pulp cavity along the lateral sides of the base of the tooth.

   - **PLEURODONT TYPE**: In this type of dentition, the teeth are attached to indentations on the inner margin of jaw bone. E.g. Lizards, urodels.
   - **ACRODONT TYPE**: Teeth are attached to the crest of the jaw bone. Such teeth can easily break off. E.g. Frogs, shark.
   - **THECODONT TYPE**: Roots of the teeth are embedded in the alveolus (sockets) of the jaw bone. The crown projects above the socket. Mammalian tooth has longer roots and may be open-rooted or close-rooted. E.g. Fishes, crocodiles and mammals.

3. **SUCCESSION OF TEETH:** Dentition can also be classified based on whether the teeth are permanent or can be replaced. They can be differentiated into polyphyodont, diphyodont and monophyodont.

   - **POLYPHYODONT**: In this type of dentition, the teeth are replaced continually indefinite number of times. This condition is not commonly seen in mammals. E.g. Crocodiles

- **DIPHYODONT:** Most mammals develop two sets of teeth and this condition is termed as diphyodont condition. The first set of teeth is present after birth and is termed as milk teeth or deciduous teeth. The milk teeth are replaced by the permanent teeth. The milk teeth do not have any molars. The permanent teeth last throughout their life and if lost, they cannot be replaced. E.g. Humans.
- **MONOPHYODONT:** The animal develops only one set of teeth. E.g. Dolphins, sirenians, moles, marsupials.