

**BSc Zoology Part II****CHARACTERS AND CLASSIFICATION OF CLASS REPTILIA****General Characters:-**

Reptile represent the first class of vertebrates fully adapted for life in dry place on land. The characters of reptiles are in fact a combination of characters that are found in fish and amphibians on the one hand and in birds and mammals on the other. The class name refers to the mode of locomotion- (L; *reperere* or *reptum*= to creep or crawl), and study reptiles is called Herpetology (Gr; *herpeton*= reptiles).

- Predominantly terrestrial, creeping or burrowing, mostly carnivorous, air breathing, cold blooded, oviparous and tetrapodal vertebrates.
- Body bilaterally symmetrical and divisible into 4 regions- head, neck, trunk and tail.
- Limbs 2 pairs, pentadactyle, digits provide with horny claws. However, limbs absent in a few lizards and all snakes.
- Exoskeleton of horny epidermal scales, shields, plates and scutes.
- Skin dry, cornified and devoid of glands.
- Mouth terminal, jaws bear simple conical teeth. In turtles teeth replaced by horny beak.
- Alimentary canal terminates into a cloacal aperture.
- Endoskeleton bony. Skull with occipital condyle (monocondylar). A characteristic T- shaped interclavical present.
- Heart usually 3 chambered, 4 chambered in crocodiles. Sinus venosus reduced. 2 systemic arches present. Red blood corpuscles oval and nucleated. Cold blooded (poikilothermal).
- Respiration by lungs throughout life.
- Kidneys metanephric. Excretion uricotelic.
- Brain with better development of cerebrum than in amphibia. Cranial nerves 10 pairs.
- Lateral line system absent. Jacobson's organs present in the roof of mouth.
- Sexes separate. Male usually with muscular copulatory organ.
- Fertilization internal. Mostly oviparous. Large yolky meroblastic eggs, covered with leathery shells, always laid on land.

- Embryonic membranes (amnion, chorion, yolk sac and allantois) appear during development.
- No metamorphosis. Young resembles adults.
- Parental care usually absent.

**Classification:-**

- There are more than 7000 living and several extinct species of reptiles.
- The class reptilia is divided into 5 major groups or subclasses on the basis of presence or absence of certain openings through the posterolateral or temporal region of the skull.

**Subclass I: Anapsida**

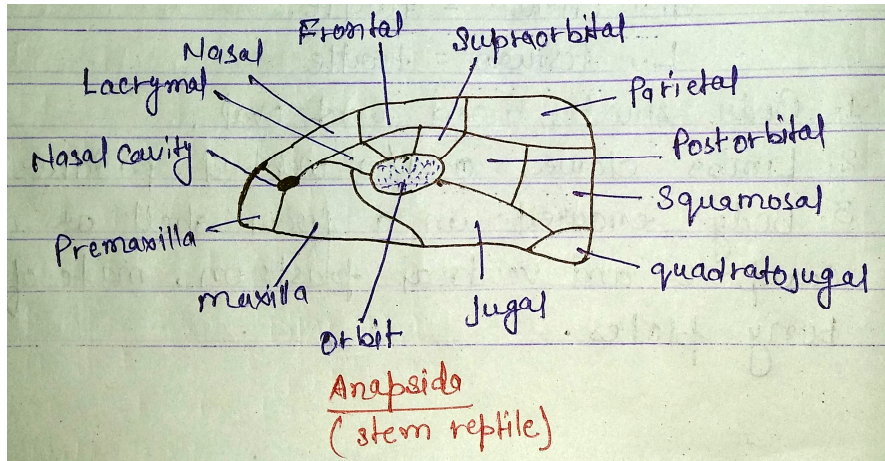
- Primitive reptiles with a solid skull roof.
- No temporal openings.

**Order 1: Chelonia or Testudinata**

(Gr; *chelone*= turtle, L; *testudo*= turtle)

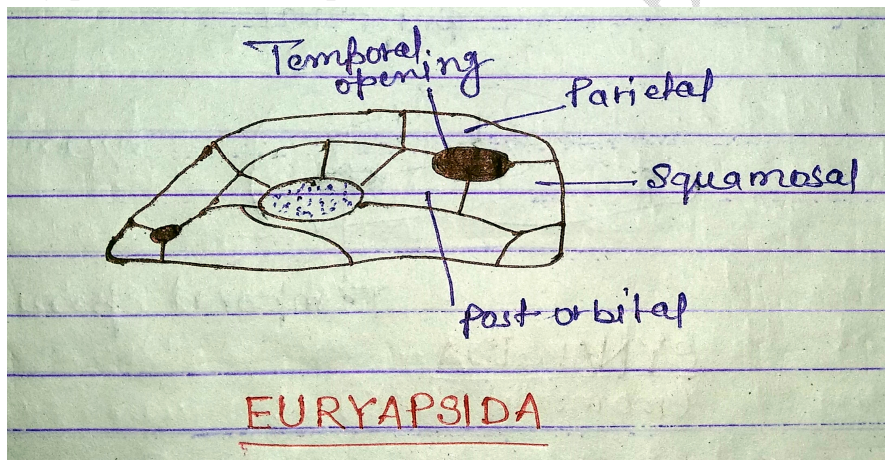
- Body short, broad and oval.
- Limbs clawed and/or webbed, paddle-like.
- Body encased in a firm shell or dorsal carapace and ventral plastron, made of dermal bony plates.
- Thoracic vertebrae and ribs usually fused to carapace.
- Skull anapsid, with a single nasal opening and without a parietal, foramen. Quadrate is immovable.
- No sternum is found.
- Teeth absent.
- Jaws with horny sheaths.
- Cloacal aperture a longitudinal slit.
- Heart incompletely 4-chambered with a partly divided ventricle.
- Copulatory organ single and simple.
- About 400 species of marine turtles, fresh water terrapins and terrestrial tortoises.

Example: *Chelone*, *Chrysemys*, *Testudo*, *Tryonyx*, *Dermochelys*.



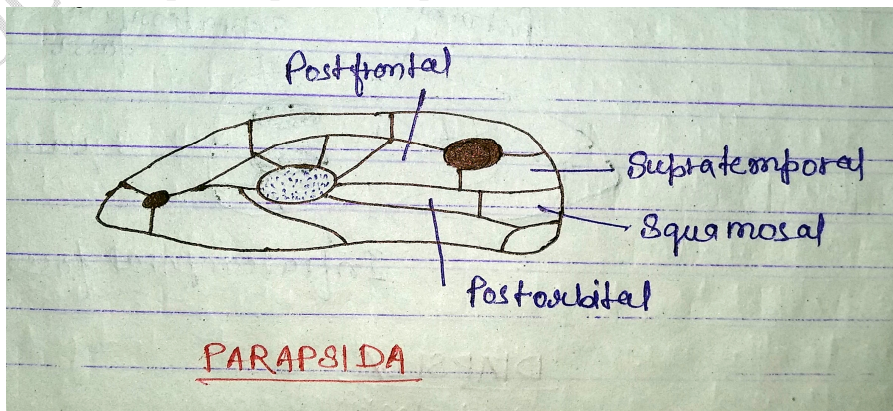
**Subclass II: Euryapsida (Extinct)**

- Skull with a single dorso-lateral temporal opening on either side, bounded below by postorbital and squamosal bones.



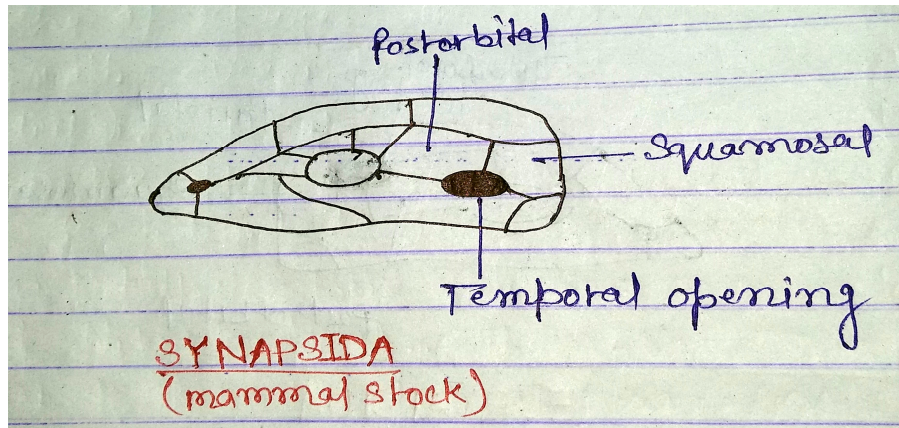
**Subclass III: Parapsida (Extinct)**

- Skull with a single dorsolateral temporal opening on either side bounded below by the supratemporal and postfrontal bones.



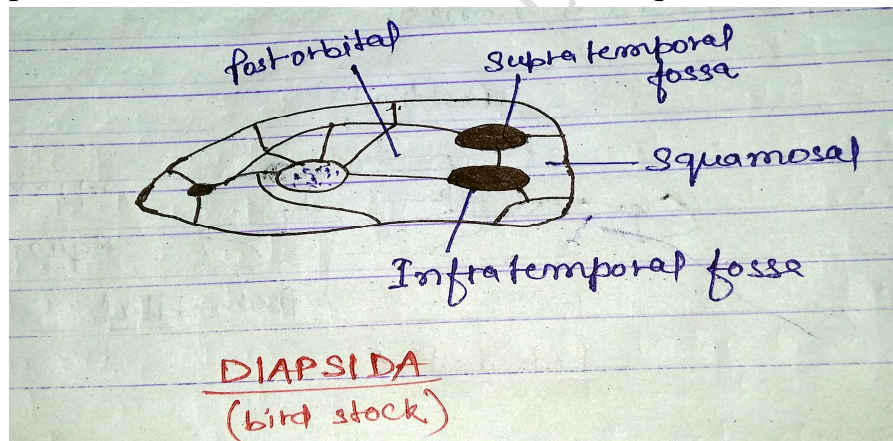
### Subclass IV: Synapsida (Extinct)

- Skull with a single lateral temporal opening on either side bounded above by the postorbital and squamosal bones.



### Subclass V: Diapsida

- Skull with two temporal openings on either side separated by the bar of postorbital and squamosal bones.



### Order 2: Rynchocephalia

(L; *rynchos*= snout, Gr; *kephale*= head)

- Body small, elongated, lizard like.
- Limbs pentadactyle, clawed and burrowing.
- Skin covered by granular scales and a mid-dorsal row of spines.
- Skull diapsid. Nasal openings separate. Parietal foramen with vestigial pineal eye present. Quadrate is fixed.
- Vertebrae amphicoelous or biconcave. Numerous abdominal ribs present.
- Teeth acrodont. Cloacal aperture transverse.
- Heart incompletely 4-chambered.

- No copulatory organ in male.

**Example:** Single living species “tuatara” or *Sphenodon punctatum* (New Zealand).

### Order 3: Squamata

(L; *squama*= scale or *squamatus*= scaly)

- Advanced, small to medium, elongated.
- Limbs clawed, absent in snakes and few lizards.
- Exoskeleton of horny epidermal scales, shields and spines.
- Skull diapsid. Quadrate movable.
- Vertebrae procoelous. Ribs single-headed.
- Teeth acrodont or pleurodont.
- Heart incompletely 4-chambered.
- Cloacal aperture is transverse.
- Male with eversible double copulatory organs (hemipenis).
- About 6,800 species of lizards and snakes.
- These are divided into 2 suborders-  
(i) Lacertilia (ii) Ophidia

**Example:** *Hemidactylus*, *Calotes*, *Uromastix*, *Varanus*, *Chameleon*, *Draco*, *Heloderma*, *Iguana*, *Ophisurus*, *Typhlops*, *Python*, *Boa*, *Lycodon*, *Eryx*, *Naja*, *Bungarus*, *Vipera*, *Hydrophis*, *Crotalus* etc.

### Order 4: Crocodylia

(Gr; *krokodeilos*= crocodile)

- Large sized, carnivorous and aquatic reptile.
- Tail long, strong and laterally compressed.
- Limbs short but powerful, clawed and webbed.
- Skin thick with scales bony plates and scutes.
- Skull diapsid. Quadrate immovable. No parietal foramen. A pseudopalate present.
- Ribs bicephalus. Abdominal ribs present.
- Teeth numerous, thecodont, lodged in socket.
- Heart completely 4-chambered.
- Cloacal aperture is longitudinal slit.
- Male with a median, erectile, grooved penis.

Example: *Crocodylus*, *Gavialis*, *Alligator*.