

NCERT Exemplar Solutions of Class 11 Biology – Chapter: 4 – Animal Kingdom**LONG ANSWER TYPE QUESTIONS**

1. Give three major differences between chordates and non-chordates and draw a schematic sketch of a chordate showing those features.

Solution:

| Chordates | Non-Chordates |
|-----------------------------------|----------------------------------|
| Have notochord | Don't have notochord |
| Tail is present at some stage | Tail is absent |
| Heart is ventral | Heart is dorsal |
| CNS is dorsal | CNS is central, solid and double |
| Gill slits are present in pharynx | Gill slits are absent |

Enhanced Explanation: These differences reflect fundamental body plan distinctions that separate chordates from all other animal phyla, representing major evolutionary innovations.

2. What is the relationship between germinal layers and the formation of the body cavity in case of coelomate, acoelomates and pseudocoelomates?

Solution: Germinal layers are formed during gastrulation. The outer layer is ectoderm, middle is mesoderm, and innermost is endoderm.

- **Coelomates:** Possess coelom (body cavity lined by mesoderm). Examples: Annelida, Mollusca, Arthropoda
- **Acoelomates:** Organisms with absent body cavities. Example: Platyhelminthes
- **Pseudocoelomates:** Body cavity not lined by mesoderm, scattered between ectoderm and endoderm. Example: Ascaris

Enhanced Explanation: The presence and type of body cavity affects organ development, movement, and overall body complexity, with coelomates showing the highest level of organization.

3. Comment upon the habitats and external features of animals belonging to class Amphibia and Reptilia.

Solution:

Amphibia:

- Habitat: Can live on both land and water (dual habitat)
- Skin: Thin and smooth, glandular
- Eyes: Have eyelids
- Limbs: Pair of limbs present
- Ears: Tympanum represents ears
- Examples: Rana (frog), Bufo (toad)

Reptilia:

- Habitat: Mostly terrestrial
- Skin: Covered with dry and cornified scales
- Movement: Creep and crawl
- Reproduction: Oviparous with internal fertilization
- Development: Direct or indirect
- Examples: Crocodile, turtle, snake, lizard

Enhanced Explanation: Amphibians represent the transition from aquatic to terrestrial life, while reptiles are fully adapted to terrestrial environments with advanced reproductive and protective adaptations.

4. Mammals are most adapted among the vertebrates. Elaborate.

Solution: Mammals show remarkable adaptations:

- **Habitat diversity:** Found in deserts, plains, mountains, aquatic environments
- **Limb adaptations:** Used for walking, burrowing, climbing, swimming, flying
- **Mammary glands:** Produce milk to nourish young ones
- **Temperature regulation:** Warm-blooded with hair for insulation
- **Circulatory system:** 4-chambered heart for efficient circulation
- **Nervous system:** Highly developed brain for complex behaviors
- **Reproduction:** Internal fertilization with parental care

Enhanced Explanation: These adaptations have allowed mammals to colonize virtually every habitat on Earth, from deep oceans to high altitudes, making them one of the most successful vertebrate groups. Examples include humans, whales, bats, elephants, and many others, each showing specialized adaptations to their specific environments.