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KPK Class 11 Biology Conceptual Questions – Chapter 9

Diversity Among Animals

Q1: Why are certain animals called living fossils?

Answer: Certain animals are called "living fossils" because they have remained virtually unchanged for millions of years, both in their physical structure and in their ecological roles. They closely resemble their ancient ancestors found in fossil records, indicating that they have undergone very little evolutionary change over long geological periods.

Q2: What is the reason for the formation of larva during the life cycle of many animals?

Answer: The formation of a larva during the life cycle of many animals is crucial for several reasons:

- Dispersal: Larvae often have different habitats and food sources compared to adults, reducing competition and aiding in species dispersal.
 - Growth and Development: Larvae allow for continued growth and development in a stage where they can exploit different ecological niches.
 - Metamorphosis: It facilitates significant morphological transformations during metamorphosis, allowing the organism to adapt to different life stages.
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Q3: What is the importance of polymorphism?

Answer: Polymorphism is important because it allows different forms within a species to adapt to diverse environmental conditions, enhancing survival and reproduction. It increases genetic diversity, which can protect populations against diseases, predators, and changing environments. In social insects, polymorphism plays a critical role in dividing labor and improving colony efficiency.

Q4: Cuttlefish, jellyfish, and starfish are invertebrates and are not fishes. Why are many invertebrates called fish?

Answer: Many invertebrates are called "fish" due to historical naming conventions based on superficial resemblances to true fish. For example, cuttlefish, jellyfish, and starfish have aquatic lifestyles and similar body shapes to fish, leading early naturalists to include "fish" in their common names, even though they are not true fishes.

Q5: Why do reptiles excrete nitrogenous wastes in the form of uric acid crystals?

Answer: Reptiles excrete nitrogenous wastes as uric acid crystals because it allows them to conserve water, which is crucial for survival in their often arid environments. Uric acid is less toxic and can be excreted as a semi-solid paste with minimal water loss, unlike urea or ammonia, which require more water for excretion.

Q6: In what way is hemolymph different from blood?

Answer: Hemolymph differs from blood in that it is not confined within blood vessels and directly bathes the organs in an open circulatory system, as seen in invertebrates. Hemolymph does not carry respiratory gases like oxygen, as it lacks hemoglobin, but it transports nutrients, waste products, and hormones throughout the body.

Q7: Differentiate between Protostomes and Deuterostomes.

Answer:

- Protostomes:
- The blastopore (first opening) develops into the mouth.
- Cleavage is spiral and determinate.
- Examples: Arthropods, Mollusks, Annelids.

- Deuterostomes:
 - The blastopore develops into the anus.
 - Cleavage is radial and indeterminate.
 - Examples: Echinoderms, Chordates.
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Q8: Why is alternation of generation required?

Answer: Alternation of generations is required for the life cycle of certain organisms, like cnidarians, to adapt to varying environmental conditions. It allows them to exploit different habitats or resources during different stages of their life cycle, contributing to survival and reproduction by alternating between sexual and asexual phases.

Q9: What is the difference between haemocoel and coelom?

Answer:

- Haemocoel: A body cavity in invertebrates where blood or hemolymph directly bathes organs in an open circulatory system. It lacks a lining of mesoderm.
 - Coelom: A true body cavity fully lined by mesoderm, found in more complex animals, where internal organs are suspended and cushioned, allowing more advanced organ development and function.
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Q10: List three organisms each representing radial symmetry and bilateral symmetry.

Answer:

- Radial Symmetry:

1. Starfish
2. Jellyfish

3. Sea anemone

- Bilateral Symmetry:

1. Humans

2. Butterflies

3. Earthworms

Q11: Differentiate between Prototheria and Metatheria.

Answer:

- Prototheria (Monotremes):

- Egg-laying mammals.

- Lack nipples; milk is secreted through mammary gland ducts.

- Examples: Platypus, Echidna.

- Metatheria (Marsupials):

- Give birth to underdeveloped young, which mature in a pouch.

- Have nipples in the pouch where the young continue to develop.

- Examples: Kangaroos, Opossums.