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Class 12th

Sub. Biology

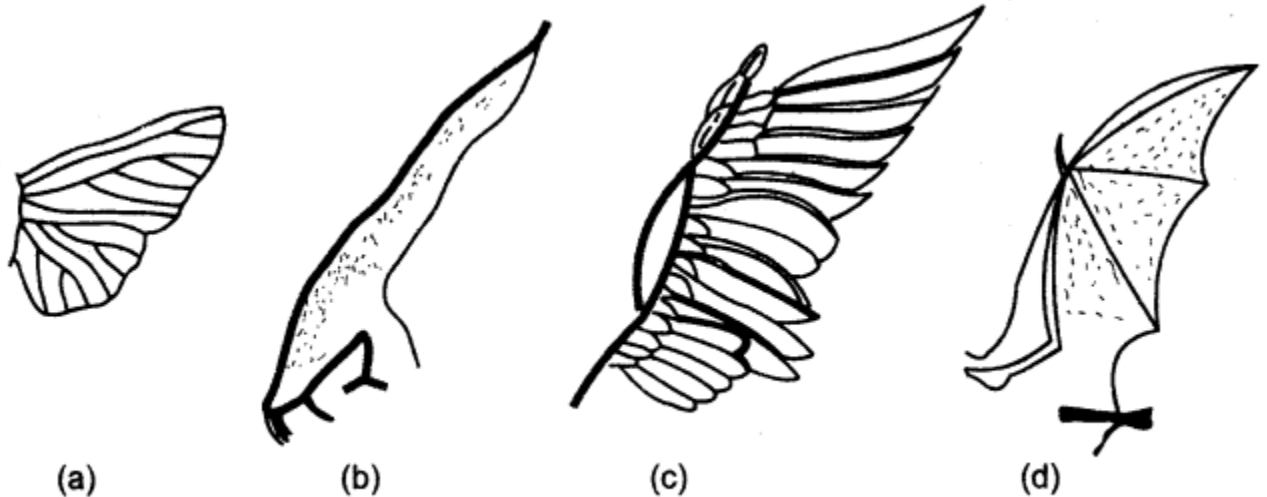
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II. (a) Organs which are anatomically different but functionally similar are called analogous organs. For example, wings of butterfly and birds.

(b) Analogy refers to a situation exactly opposite to homology.

(c) Analogous organs are a result of convergent evolution. It is the evolution in which different structures evolve for same function and hence, have similarity.

(d) Other examples of analogy are eyes of Octopus and mammals; flippers of penguins and dolphins. In plants, sweet potato (root modification) and potato (stem modification).



Analogous organs (a) Wing of insect (b) Wing of Pterodactyl (c) Wing of bird (d) Wing of bat

III. Vestigial organs like homologous organs provide evidences for organic evolution.

These are degenerate, non-functional and rudimentary organs to the possessor, while correspond to fully developed and functional organs of related organisms.

(a) There are about 90 vestigial organs in the human body. Some of them are tail bone (coccyx), wisdom teeth, nictitating membrane, vermiform appendix, etc.

(b) Some examples from other animals are hip girdles and bones of the hind limbs in some whales and certain snakes and wings of flightless birds.

Biochemical Evidences

(a) The metabolic processes in organisms are similar with same raw materials and end products. For example, energy released by oxidation is stored in ATP which then powers the energy requiring process.

(b) Molecular homology is the similarity among animals at the molecular level.

For example, human DNA differs in only 1.8% of its base pairs from chimpanzee DNA and there is no difference between the two in the amino acid sequence for the protein cytochrome-c.

(iv) Biogeographical evidences The species restricted to a region develop unique features. Also, species present in far separated regions show similarity of ancestry.