



# **BIOLOGY**

**BOOKS - PEARSON IIT JEE**

**FOUNDATION**

**EVOLUTION**

**Test Your Concepts Fill In The Blanks In Each  
Question**

1. \_\_\_\_\_ period in \_\_\_\_\_ era was known as the Golden age of reptiles.



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2. \_\_\_\_\_ organs are examples of divergent evolution.



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3. Analogous organs are examples of \_\_\_\_\_ evolution.



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4. Fossils are usually formed in the \_\_\_\_\_ rocks.



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5. \_\_\_\_\_ is a missing link between reptiles and birds.



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6. Flippers of whales and wings of birds are supposed to have originated from \_\_\_\_\_ of common ancestral form.



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7. The study of the process of development of an organism from an embryo and the related aspects is called\_\_\_\_\_.



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8. \_\_\_\_\_are vestigial organs in ostrich.



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9. \_\_\_\_\_ is food storage organ in sweet potato.



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10. The modified stems of desert plants are called \_\_\_\_\_.



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11. Thorns in cactus and tendrils in pea plants are called\_\_\_\_\_ organs.



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12. Lamarckism is also called\_\_\_\_\_.



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13. Ancestors of Darwin's finches were \_\_\_\_\_eating.



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14. The name of the ship in which Darwin under took his famous voyage is\_\_\_\_\_.



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15. The sudden variations in genetic makeup appearing in a particular generation are called \_\_\_\_\_.



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16. \_\_\_\_\_ followed by \_\_\_\_\_ during meiotic cell division bring about variations.



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17. Elimination of some genetic traits from an area due to natural calamities or accidents is called \_\_\_\_\_



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**18.** The origin of new species from an existing species is called\_\_\_\_\_.



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**19.** The ancestral ape from which modern man originated belonged to the order of\_\_\_\_\_



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**20.** The scientific name of modern man is \_\_\_\_\_



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21. The simplest living organisms on earth are

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**Test Your Concepts Select The Correct Alternative**

1. Identify the vestigial organ in human body

A. Coccyx

B. Nictitating membrane of eye

C. Ear muscles

D. All the above

**Answer: D**



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2. Which of the following are homologous organs?

A. Wings of bird and fly

B. Wing of bat and flipper of whale

C. Fin of lobster and fluke of whale

D. None of these

**Answer: B**



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**3. Identify the common feature of analogous organs**

A. Common origin

B. Similar morphology

C. Similar anatomical structure

D. Similar function

**Answer: D**



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4. Which of the following evidences strongly support the origin of amphibians from fishes?

A. Adaptive radiation

B. Embryological evidences

C. Morphological evidences

D. Convergent evolution

**Answer: B**



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5. Identify the analogous organs among the following.

A. Edible parts of sweet potato and potato

B. Leaf of cabbage and leaf of Ruscus

C. Mouth parts in cockroach and honey bee

D. Wings of birds and wings of butterfly

**Answer: C**



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**6.** Which of the following is a connecting link between reptiles and mammals?

A. Echidna



B. Dinosaurs

C. Seymouria

D. Latimeria

**Answer: A**



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7. Phylloclades in some plants perform which function?

A. Food storage

B. Transpiration

C. Protection

D. Photosynthesis

**Answer: D**



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**8.** Which of the following words mean common ancestry with respect to evolution?

A. Analogy

B. Homology

C. Ontogeny

D. Phylogeny

**Answer: B**



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9. Identify the group of organisms that were supposed to have undergone mass extinction.

A. Marsupials

B. Balanoglossus

C. Egg laying mammals

D. Dinosaurs

**Answer: D**



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**10.** Pelvic bone became rudimentary in which animal?

A. Human

B. Ostrich

C. Whale

D. Placental mammals

**Answer: C**



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**11. Oldest fossils belonged to which era?**

A. Mesozoic era

B. Palaeozoic era

C. Precambrian era

D. Coenozoic era

**Answer: C**



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**12.** The characteristic features of dinosaurs show close resemblance with which of the following organisms living today?

A. Salamanders

B. Apes

C. Crocodiles

D. Kangaroos

**Answer: C**



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**13.** Which of the following evidences suggest the common ancestry of fish and birds?

(A) Presence of fins and wings

(B) Same excretory product in fishes and birds

(C) Same respiratory organs in adult organisms

(D) Similarity in embryonic structure

A. A, D

B. D only

C. A only

D. B, C

**Answer: B**



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**14.** Which of the following classes of animals possessed a two-chambered heart?

A. Fish

B. Amphibians

C. Reptiles

D. Birds

**Answer: A**



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**15.** A crow picked up a beetle from one region and dropped it by chance at another region with out eating. Then, the beetle had to breed with the beetles of the new region thereby producing a new genetic combination. Identify the evolutionary agent involved.

A. Genetic drift

B. Gene flow

C. Reproductive isolation

D. Speciation

**Answer: B**



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**16.** Which among the following groups of organisms shows the closest relationship?

- A. Protochordates and fish
- B. Annelids and nematodes
- C. Amphibians and fish
- D. Whales and fish

**Answer: C**



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**17.** Which of the following books explained the concept of natural selection as the basis of evolution?

- A. Philosophic zoologique
- B. Origin of species
- C. Living laboratory of evolution
- D. Neo-Darwinism

**Answer: B**



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**18.** Identify the name of the first ancestral man among the following

- A. Dryopithecus
- B. Ramapithecus
- C. Homo habilis
- D. Homo erectus

**Answer: B**



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**19.** Which among the following species in the evolution of man showed bipedal locomotion for the first time?

A. Homo habilis

B. Homo sapiens

C. Homo erectus

D. Australopithecus

**Answer: C**



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**20.** Which of the following morphological changes were involved in the evolution of man from apes?

- (A) Development of mammary glands
- (B) Viviparity
- (C) Flattening of face
- (D) Formation of bowl-like pelvic girdle

A.  $A : B$

B.  $C : D$

C.  $A : B : C$

D.  $B : C : D$

**Answer: B**



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**21.** The origin of limbless snakes is an example of which concept of evolution according to Lamarck?



A. Use and disuse theory

B. Concept of vestigial organs

C. Mutation

D. Inheritance of useful variations

**Answer: A**



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**22. Identify the odd one among the following.**

A. Chimpanzee

B. Cow

C. Orangutan

D. Gibbon

**Answer: B**



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**Test Your Concepts Match The Entries Of Column  
1 With Those Of Column 2**

Column 1	Column 2
A. Homologous organs	(i) Convergent evolution
B. Abiogenesis	(ii) Life originated from pre-existing life forms
C. Biogenesis	(iii) Divergent evolution
D. Wings of bat and bird	(iv) Life from non-living matter

1.



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Column 1	Column 2
A. Walked on two limbs	(i) Ape like
B. <i>Homo sapiens</i>	(ii) <i>Homo erectus</i>
C. Java man	(iii) Hugo de Vries
D. <i>Dryopithecus</i>	(iv) Modern man

2.



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## Mastering The Concepts Knowledge And Understanding

1. Define the following.

(a) Convergent evolution



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2. Define the following.

(b) Adaptive radiation



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3. Name the theory that explained the origin of universe. What are the salient features of the theory?



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4. What are the various types of studies on fossils that could provide evidences for organic evolution?



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5. Explain how the study of embryos of vertebrates provide evidence for their common ancestry.



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6. What are fossils? How are they formed?



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7. State the similarities and differences between connecting links and missing links.



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8. Distinguish between homologous organs and analogous organs.



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**9.** What are connecting links? Explain by taking example of Peripatus.



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**10.** What are vestigial organs? Explain with an example in digestive system of human body.



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**11.** List out the morphological changes that took place in the course of evolution of man from other primates.



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**12.** Define the following.

Struggle for existence



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**13.** Define the following

Acquired characters



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**14.** Distinguish between gene flow and genetic drift.



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**15.** List out the various evolutionary agents as envisaged by the modern theory of evolution.



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**16.** Explain Lamarckism principle of use and dis use with respect to the origin of giraffe.



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**17.** What are acquired characters? Give an example.



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**18.** Explain the evolution of man.



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**19.** Under what conditions, gene migration lead to speciation?



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20. How did Weismann's germplasm theory disprove Lamarckism?



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21. Distinguish between the following.

Prokaryotes and eukaryotes



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**22.** Distinguish between the following.

Invertebrates and vertebrates



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**23.** Distinguish between the following.

Gymnosperms and angiosperms



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**24.** Distinguish between the following.

Protochordates and vertebrates



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**25.** Explain the concept of survival of the fittest.



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**26.** What is meant by struggle for existence and survival of the fittest? Explain with an appropriate example.



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## Application And Analysis

**1.** Mention the reptilian and avian characters of Archaeopteryx



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2. On what basis it was presumed that dinosaurs were subjected to mass extinctions?



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3. The origin of living matter from non-living matter is called abiogenesis. It is accepted in scientific community. However, cell theory always says that life starts from a living cell only. How do you justify this contradiction?



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4. Justify that cycas plant is a connecting link between pteridophytes and gymnosperms.



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5. Explain the anatomical structure of forelimb of man and relate its homology with any other non-mammalian animal.



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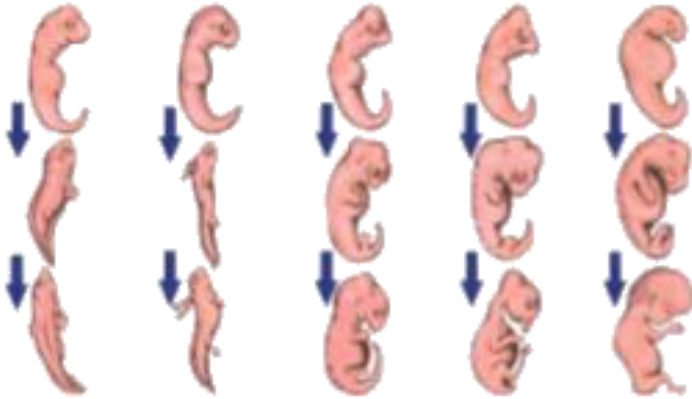
6. What is the function of appendix in vertebrates? Why did it become vestigial in modern man?



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7. What does the below diagram indicate? Mention the conclusion which can be drawn

from the diagram.



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**8.** What are the similarities and differences found in the early embryonic stages of different classes of vertebrates? How can they support the organic evolution?



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9. What does the mode of breathing in lung fish indicate? Explain.



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10. Duck-billed platypus is the connecting link between reptiles and mammals. Give reason



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**11.** Leaves are the food factories of plants. But, in the plant Indian pipe, the leaves are considered as the vestigial structures. Justify.



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**12.** Identify the homologous or analogous pairs of organs among the following by giving proper justification:

Thorn of bougainvillea and tendrils of cucurbita



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**13.** Identify the homologous or analogous pairs of organs among the following by giving proper justification:

Flippers of dolphin and penguin.



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**14.** The two chambered heart in fish underwent a gradual change to three- and four-chambered heart in the other classes of vertebrates. Justify.



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**15.** With respect to embryology, justify the prediction that vertebrates are evolved from invertebrates.



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**16.** Gymnosperms are evolved from pteridophytes. Give reason



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**17.** What is the status of duck-billed platypus in the evolutionary lineage?



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**18.** Mule and hinny are produced by hybridization horse and donkey. But they are sterile. Justify.



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**19.** Bring about certain similarities between ape and man to justify their common ancestry.



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**20.** In course of time certain antibiotics become ineffective for a particular disease. How do you explain this with respect to Darwinism?



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**21.** Explain molecular phylogeny with respect to common ancestry of ape and man.



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**22.** Embryos of birds are found to develop tooth buds. What do we infer from this?



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**23.** Justify the phylogeny of the following.

Mosses and ferns are evolved from algae



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**24.** Site some evidences to show that man is more closely related to apes than to monkeys though they share common ancestry.



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**25.** Assertion (A): Jurassic period was known as the golden age of dinosaurs.

Reason (R): Dinosaurs originated in the Jurassic period.

A. Both A and R are true and R is the correct explanation for A.

B. Both A and R are true, but R is not the correct explanation for A.

C. A is true and R is false.

D. A is false and R is true.

**Answer:**



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## Assertions And Reasons

1. Assertion (A): Fossils are formed in the rocks in the deep layers of earth's crust.

Reason (R) : Decomposition of dead organisms is prevented due to lack of oxygen.



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**2. Assertion (A):** Thorns of bougainvillea and tendrils of passiflora are said to be homologous organs.

**Reason (R):** They both perform the same function.



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**3. Assertion (A):** Euglena is a connecting link between plants and animals.

**Reason (R):** Euglena is a unicellular eukaryote





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4. Assertion (A): Balanoglossus is a missing link between non-chordates and chordates

Reason (R): Balanoglossus possesses a notochord in the adult form.



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5. Assertion (A): The struggle for existence between two tigers is more intense than that between a tiger and a lion.



Reason (R): Tiger and lion differ widely in their feeding habits.



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6. Assertion (A): It is presumed that man originated from chimpanzee.

Reason (R): Dryopithecus was the ancestor for chimpanzee.



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7. Assertion (A): Boring the nose or pinna of ear by women is not inherited by their daughters.

Reason (R): Acquired characters cannot be inherited.



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8. Assertion (A): Sometimes, the variations that are not useful are also inherited.

Reason (R): Vestigial organs are inherited





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## Assessments Tests

1. Wisdom teeth in man are considered as \_\_\_\_\_ organs.



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2. The preserved dead remains of the extinct organisms in earth's crust are called \_\_\_\_\_



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3. The study of fossils is known as \_\_\_\_\_



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4. The nonfunctional structures in the body of an organism is called \_\_\_\_\_



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5. The approximate number of vestigial organs in human body is \_\_\_\_\_



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6. The organs in different animals having similar function and different structure are called \_\_\_\_\_



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7. Identify the vestigial organ in human body.

A. Coccyx

B. Nictitating membrane of eye

C. Ear muscles

D. All the above

**Answer:**



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8. Which of the following are homologous organs?

A. Wings of bird and fly

B. Wing of bat and flippers of whale

C. Fin of lobster and fluke of whale

D. None of these

**Answer:**



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9. Identify analogous organs among the following.

A. Eyes of ant and cat

B. Arm in man and leg in bull

C. Fluke of whale and limb of man

D. Forelimb of bat and forelimb of horse

**Answer:**



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10. Who proposed the theory of natural selection?

A. Jean Baptist Lamarck

B. Charles Darwin

C. Hugo de Vries

D. Johann Mendel

**Answer:**



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11. Fishes : Amphibians :: Reptiles : \_\_\_\_\_



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12. \_\_\_\_\_ : Lamark :: Natural selection : Darwing



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13. Vestigial organs in the organisms of one species are non-functional in the organisms of all the other species.



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**14.** Growth of algae and fungi on the tree trunk imparts black colour to the tree trunk.



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**15.** What is the status of duck-billed platypus in the evolutionary lineage?



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**16.** Explain the anatomical structure of forelimb of man and relate its homology with any other non-mammalian animal.



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