



# BIOLOGY

## BOOKS - FULL MARKS BIOLOGY (TAMIL ENGLISH)

### EVOLUTION

**Textbook Evaluation Solved**

1. The first life on earth originated

A. in air

B. on land

C. in water

D. on mountain

**Answer: C**



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**2. Who published the book "Origin of species by Natural Selection" in 1859 ?**

A. Charles Darwin

B. Lamarck

C. Weismann

D. Hugo de Vries

**Answer: A**



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**3. Which of the following was the contribution of Hugo de Vries ?**

A. Theory of mutation

B. Theory of natural Selection

C. Theory of inheritance of acquired characters

D. Germplasm theory

**Answer: A**



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4. The wings of birds and butterflies is an example of

A. Adaptive radiation

B. convergent evolution

C. divergent evolution

D. variation

**Answer: B**



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5. The phenomenon of "Industrial Melanism" demonstrates

- A. Natural selection
- B. induced mutation
- C. reproductive isolation
- D. geographical isolation

**Answer: A**



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6. Darwin's finches are an excellent example of

.....

A. connecting links

B. seasonal migration

C. adaptive radiation

D. parasitism

**Answer: C**



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7. Who proposed the Germplasm theory ?

A. Darwin

B. August Weismann

C. Lamarck

D. Alfred Wallace

**Answer: B**



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8. The age of fossils can be determined by



A. electron microscope

B. weighing the fossils

C. carbon dating

D. analysis of bone

**Answer: C**



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**9. Fossils are generally found in**

A. igneous rocks

B. metamorphic rocks

C. volcanic rocks

D. sedimentary rocks

**Answer: D**



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**10.** Evolutionary history of an organism is called

A. ancestry

B. ontogeny

C. phylogeny

D. paleontology

**Answer: C**



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**11. The golden age of reptiles was**

A. Mesozoic era

B. Cenozoic era

C. Paleozoic era

D. Proterozoic era

**Answer: A**



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**12. Which period was called "Age of fishes" ?**

A. Permian

B. Triassic

C. Devonian

D. Ordovician

**Answer: C**



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**13. Modern man belongs to which period ?**

A. Quaternary

B. Cretaceous

C. Silurian

D. Cambrian

**Answer: A**



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**14.** The Neanderthal man had the brain capacity of

A. 650-800cc

B. 1200cc

C. 900cc

D. 1400cc

**Answer: D**



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**15.** List out the major gases seem to be found in the primitive earth.



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**16.** Explain the three major categories in which fossilization occur ?



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**17.** Differentiate between divergent evolution and convergent evolution with one example for each.



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**18.** How does Hardy-Weinberg's expression  $(p^2 + 2pq + q^2 = 1)$  explain that genetic equilibrium is maintained in population ? List



any four factors that can disturb the genetic equilibrium.



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**19.** Explain how mutations, natural selection and genetic drift affect Hardy Weinberg equilibrium.



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20. How did Darwin explain fitness of organisms ?



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21. Mention the main objections to Darwinism.



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22. Taking the example of Peppered moth, explain the action of natural selection. What

do you call the above phenomenon ?



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**23.** Darwin's finches and Australian marsupials are suitable examples of adaptive radiation- Justify the statement.



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**24.** Who disproved Lamarck's Theory of acquired characters? How ?



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**25.** How does Mutation theory of Dev. Vries differ from Lamarck and Darwin's view in the origin of new species.



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**26.** Explain stabilizing, directional and disruptive selection with examples.



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**27.** Rearrange the descent in human evolution

Australopithecus → Homo erectus →

Homo sapiens → Ramapithecus → Homo

habilis.



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**28.** Differentiate between the eating habit and

brain size of Australopithecus and

Ramapithecus.



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**29.** How does Neanderthal man differ from the modern man in appearance ?



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**30.** Mention any three similarities found common in Neanderthal man and Homo sapiens.



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**31.** According to Darwin, the organic evolution is due to

A. Intraspecific competition

B. Interspecific competition

C. Competition within closely related species

D. Reduced feeding efficiency in one species due to the presence of interfering species.

**Answer:**





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32. A population will not exist in Hardy-Weinberg equilibrium if

- A. Individuals mate selectively
- B. There are no mutations
- C. There is no migration
- D. The population is large

**Answer:**



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## Additional Questions 1 Mark Questions

1. Identify the incorrect statement.

- A. Neanderthal human were found in Germany.
- B. They possessed flat cranium
- C. They used to bury their dead.
- D. Their brain size is of 650 - 800 cc.

**Answer:**



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2. Which of the following statement does not satisfy Hardy Weinberg principle?

A. A population undergoing random mating

B. Small sized populatio

C. Population where there is no mutation

or gene flow

D. Absence of natural selection

**Answer:**



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### 3. Match column I with column II

Column I

- a) Cambrian period
- b) Devonian period
- c) Cenozoic era
- d) Mesozoic era

Column II

- i) Age of Reptiles
- ii) Age of fishes
- iii) Age of invertebrates
- iv) Age of mammals

A. (a) a -ii b- ii c-iv d-i

B. (b) a iv b- iii c -i d-ii

C. (c) a- ii b- iv c-i d-ii

D. (d) a - ii b- iii c -i d-iv

**Answer:**



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**4. Placental mammals develop during .....**

A. (a) Eocene

B. (b) Oligocene

C. (c) Pliocene

D. (d) Paleocene

**Answer:**



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**5. Identify the correct sequence from oldest to youngest**

A. (a) Cambrian → Permian → Devonian  
→ Silurian → Ordovician

B. (b) Permian → Silurian → Devonian  
→ Ordovician → Cambrian

C. (c) Permian → Devonian → Silurian  
→ Cambrian → Ordovician

D. (d) Cambrian → Ordovician →  
Silurian → Devonian → Permian

**Answer:**



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6. Match the scientists with their terminologies used

- (a) Biogenesis
- (b) Prebiotic soup
- (c) Coacervates
- (d) Abiogenesis

- (i) Oparin
- (ii) Henry Bastin
- (iii) Thomas Huxley
- (iv) Haldane

A. (a) a-iii b-iv c-ii d-i

B. (b) a-ii b-iv c-i d-iii

C. (c) a-iii b-i c-iv d-ii

D. (d) a-i b-iv c-iii d-ii

**Answer:**



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7. Anatomical structures that have similar functions but not similar structures are called

A. (a) Homologous structures

B. (b) Vestigial structures

C. (c) Analogous structures

D. (d) Generalized structures

**Answer:**





8. Who propounded the theory of recapitulation?

A. (a) Ernst Von Haeckel

B. (b) Charles Darwin

C. (c) Thomas Huxley

D. (d) Oparin

**Answer:**



9. Mammae in human male is.....

- A. (a) Atavistic organ
- B. (b) Rudimentary Organ
- C. (c) Vestigial organ
- D. (d) Homologous structure

**Answer:**



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**10.** Which of the following is/are not examples of analogous structure

(a) Wings of Birds and Bats

(b) Wings of Birds and Insects

(c) Thorn of Bougainvillea and Tendril of cururbita

(d) Flippers of Penguins and Dolphins

A. (a) a,b,c

B. (b) a and c

C. (c) b and d

D. (d) All the above

**Answer:**



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**11. Identify the mismatched pairs**

- A. (a) Thorn of Bougainvillea and Tenrdril of cucurbita- Analogy
- B. (b) Forelimbs of whale and cat - Analogy
- C. (c) Octopus eye & Mammalian eye - Homology

D. (d) Root of sweet potato & stem of potato - Homology

**Answer:**



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**12.** Witness for evolution are found in ..... .

A. (a) Rocks

B. (b) Ocean beds

C. (c) Fossils

D. (d) Desert

**Answer:**



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**13.** Assertion (A): Oparin used the term  
coacervates Reason

(R) : Coacervates are colloidal particles in  
aqueous environment

A. (a) Both A and R are incorrect

B. (b) A and R are correct

C. (c) Both A and R are correct . R explains A

D. (d) A is correct R is incorrect

**Answer:**



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**14.** The theory of spontaneous generation or abiogenesis was disproved by

A. Cosmic particles

B. Non-living materials

C. Coacervates

D. Sea

**Answer:**



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**15. Assertion (A):** Hardy - Weinberg principle states that allelic frequency of a population remain constant



Reason (R): Constancy is maintained through natural selection and mutation

A. A is true R is false

B. A is false R is true

C. Both A and R are true.

D. R explains A

**Answer:**



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**16.** Calculate the allelic frequency of Aa, if 'A' allelic has frequency of 0.3 and 'a' allele has frequency of 0.7

A. 0.67

B. 0.42

C. 0.36

D. 0.59

**Answer:**



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## 17. Match the following

Match the following  
Evolutionary Human  
(A) Homo sapiens  
(B) Homo erectus  
(C) Homo habilis  
(D) Australopithecus

Brain Capacity  
i) 900 cc  
ii) 650 - 800 cc  
iii) 350 - 450 cc  
iv) 1300 - 1600 cc

A. (a) a-iv b-i c-ii d-iii

B. (b) a-ii b-iv c-iii d-i

C. (c) a-ii b-iii c-iv d-i

D. (d) a - iii b-i c-ii d-iv

**Answer:**



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**18. Genetic drift leads to.....**

A. (a) Mutation

B. (b) Bottle neck effect

C. (c) Immigration

D. (d) Isolation

**Answer:**



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19. Atavism refers to .....

A. Inheritance of trait by mother

B. Inheritance of trait by father

C. Criss-cross inheritance

D. Inheritance of characters not shown by  
parents

**Answer:**



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## Additional Questions 2 Mark Questions

1. The theory of spontaneous generation or abiogenesis was disproved by



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2. What is Geologic time scale.



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3. Which periods of paleozoic era are referred as (a) Age of fishes (b) Invertebrates



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4. Point out the epochs of carboniferous period.



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5. Compare relative dating with absolute dating.



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6. Wing of a cockroach and the wing of parrot.

What do you infer from this statement with reference to evolution?



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7. Name the scientists who propounded the following theories.

(a) Mutation theory

(b) Chemical theory of evolution



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8. Define fossilization and mention its types



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9. Name the principle minerals involved in petrification.



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10. What is meant by petrification?



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11. Define analogous organ with an example



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**12.** Mention any four organs homologous to human hand



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**13.** Thorn of Bougainvillea and tendrils of Pisum sativum represent homology. How?



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**14.** Which type of evolution is brought out by homologous structures and analogous structures?



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**15.** What are vestigial organs? Give example.



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**16.** Human appendix is a vestige. Give reason.



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17. What are connecting links ?



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18. Name one fossilised connecting link between reptiles and Aves also one living connecting link between Annelida and Arthropoda.



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**19.** Archaeopteryx is considered as connecting link between birds and reptiles. Justify the statement by giving two characters of each group.



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**20.** What are atavistic organs ?



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**21. What is Phylogeny?**



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**22. Who proposed the theory of recapitulation? State the theory.**



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**23. Name few Neo - Lamarckists**



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**24.** Who disproved Lamarck's Theory of acquired characters? How ?



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**25.** Point out the basic principles of Darwin's theory of evolution



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**26.** Name any four Neo - Darwinists.





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**27.** Enumerate the salient features of mutation theory.



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**28.** Who proposed mutation theory \_\_\_\_



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**29.** What are the basic factors of modern synthetic theory that leads to evolution?



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**30.** Name the scientists who supported modern synthetic theory



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**31.** Write a note on point mutation.



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**32.** Point out the factors that alters allelic frequency of a population.



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**33.** Mention any two differences between Homo habilis and Homo erectus



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**34.** Write a brief note on Homo sapiens with respect to evolution.



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**35.** Define evolution.



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**Additional Questions 3 Mark Questions**

1. Write a short note on Big Bang theory.



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2. Theory of chemical evolution states that organisms have evolved from inorganic substances. If so, what was the atmospheric condition that favoured evolution?



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3. Name the periods of Mesozoic era. Also mention the flora and fauna dominated during that periods.



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4. Which era is referred as Age of Mammals? What are the periods of that era? And also mention the fauna during the periods.



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5. Write a short note on Cenozoic era.



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6. Name the gaseous mixture used in Urey - Miller's experiment. Which type of physical force is applied to generate amino acids?



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7. Which is the most common methods of fossilization? Explain how it occurs.



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8. What are coprolites? Mention its role in phylogeny.



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9. What are moulds and casts ?





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**10.** How will you compute the age of fossil?



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**11.** Ontogeny recapitulates phylogeny. Discuss.



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**12.** Biogenetic law is not universal - justify.



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**13.** How macro molecules like DNA and RNA play their crucial role in evolutionary history?



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**14.** Explain the principles of Lamarckian theory.



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**15.** Write a note on Mutation theory .



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**16.** What do you mean by "adaptive radiation"?

Give example.



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**17.** Darwin's finches and Australian marsupials are suitable examples of adaptive radiation-

Justify the statement.



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**18.** What is micro evolution?



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**19.** Name the types of natural selection.



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20. What do you mean by gene flow?



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21. Give an account on Genetic drift. Mention its impact over a population



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22. State Hardy - Weinberg equilibrium



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**23.** Write in brief about the characters of Australian ape man.



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**24.** Who is Cro-Magnon?



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**Additional Questions 5 Mark Questions**

1. Explain Oparin - Haldane hypothesis on evolution.



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2. How Urey - Miller's experiment supports the origin of life?



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3. Give a detailed account of Modern Synthetic Theory.



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4. Name the connecting link for the following groups of organisms.

(a) Annelida and Arthropoda

(b) Reptiles and Aves

(c) Pisces and Amphibians

(d) Reptiles and Mammals







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5. Point out any four condition under which Hardy Weinberg's equilibriumn is not 2. attained.



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6. Why are analogous structures a result of convergent evolution?



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7. Organs which are of no use to the organism is called as vestige. Name any four vestigial organs that can be noticed in your body



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