



BIOLOGY

BOOKS - SRIJAN BIOLOGY (ENGLISH)

EVOLUTION

Illustrative Questions

1. What does the presence of vermiform appendix in man indicate?



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2. Which gases were taken by Stanley Miller and Harold Urey in their experiment to support biochemical origin of life and why?



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3. How are homologous organs significant in favour of evolution?



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4. How can you prove that the tendrils of vine (Vitis) and pea (Pisum) are analogous structures?



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5. What does fish-like tadpole larva of frog signify?



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6. Why do the offspring of blind couple are not blind?



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7. Which morphological features made man most efficient in the course of evolution?



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8. Define biological species.



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9. Explain antibiotic resistance observed in bacteria in light of Darwinian selection theory.



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10. Find out from newspapers and popular science articles any new fossil discoveries or controversies about evolution.



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11. Attempt giving a clear definition of the term species.



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12. Describe one example of adaptive radiation.



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13. What are we referring to when we say 'simple organisms' or 'complex organisms'?



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14. What is founder effect?



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15. The scientists believe that evolution is gradual. But extinction, part of evolutionary

story, are 'sudden' and 'abrupt' and also group-specific. Comment whether a natural disaster can be the cause for extinction of species.



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16. Why is nascent oxygen supposed to be toxic to aerobic life forms?



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17. While creation and presence of variation is directionless, natural selection is directional as it is in the context of adaptation. Comment.



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18. Comment on the statement that "evolution and natural selection are end result or consequence of some other processes but themselves are not processes".



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19. Enumerate three most characteristic criteria for designating a Mendelian population.



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20. "Migration may enhance or blurr the effects of selection." Comment.



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21. Why are marsupials found in Australia only?



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22. Why do a pale variety of moth, *Selonia bilunaria*, when fed on manganese coated food, produce a melanic variety?



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23. Why are no two individuals identical except the identical twins?



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24. Reproductive isolation is essential for speciation. Why?



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25. How do closely related species of alligators, at present, occur only in South-eastern United States and Eastern China? Explain.



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26. We sometimes find the existence of following structures in human beings:

(a) Occurrence of short tail in some babies

(b) Presence of additional mammae in two rows down the front of the body of some

persons

(c) Power of moving pinna, or

(d) Presence of very long and dense hair on the body.

Why does this happen in some persons? Also, name the phenomenon involved.



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27. Nictitating membrane and vermiform appendix of humans are examples of which type of organs.



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28. Do coccyx, mammary glands in males, muscles of external ear and opacity of eye due to cataract belong to the same category?



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29. A population is exhibiting genetic equilibrium. Answer the following with regard to this statement.

Explain the above statement.



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30. A population is exhibiting genetic equilibrium. Answer the following with regard to this statement.

Name the underlying principle.



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31. A population is exhibiting genetic equilibrium. Answer the following with regard

to this statement.

Name any two factors which could upset the genetic equilibrium of the population.



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32. How do connecting links differ from missing links? Give one example of each.



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33. Give reasons

Special kind of evolution has brought the similarity as seen in fins of fishes and flippers of dolphins. Name the kind of evolution also.



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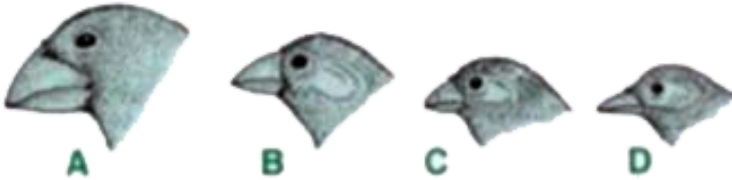
34. Give reasons

Placental wolf and Tasmanian wolf exist-sharing the same habitat.



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35. Write your observations on the variations seen in the Darwin's finches shown here.



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36. How did Darwin explain the existence of different varieties of finches on Galapagos Islands?



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37. Define the term

Germplasm



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38. Define the term

Adaptation



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39. How do Dolphin and Penguin show convergent evolution?



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40. Correct the statement if it is incorrect:

Ramapithecus was more ape-like while Dryopithecus was more man-like.



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41. Mention the specific geographical region where marsupials are found.



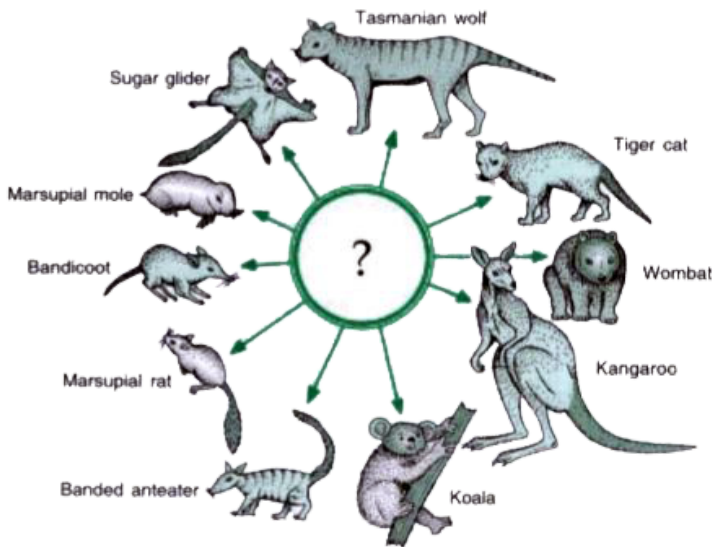
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42. Name and explain the phenomenon that has resulted in the evolution of such diverse species in the region.



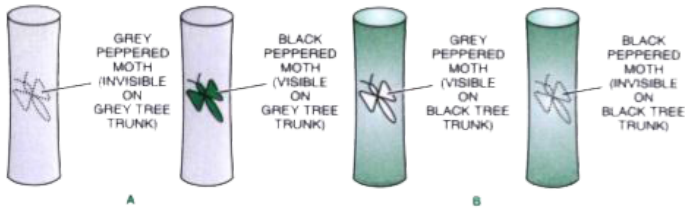
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43. Explain giving reasons the existence of Placental wolf and Tasmanian wolf sharing the same habitat.



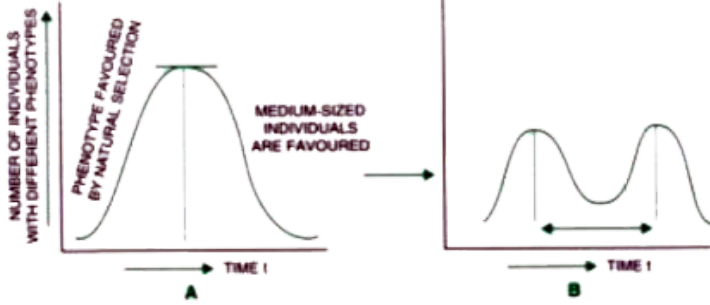
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44. What do the pictures A and B illustrate with reference to evolution? Explain.



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45. Study the figures (A) and (B) given below and answer the questions that follow:

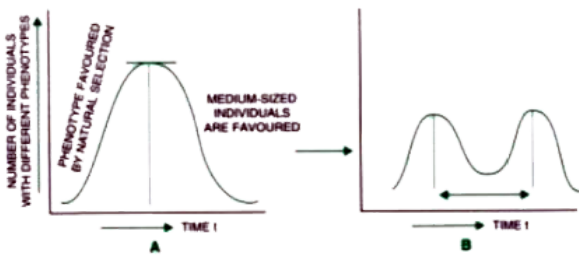


Under the influence of which type of Natural Selection would graph (A) become like graph (B)?



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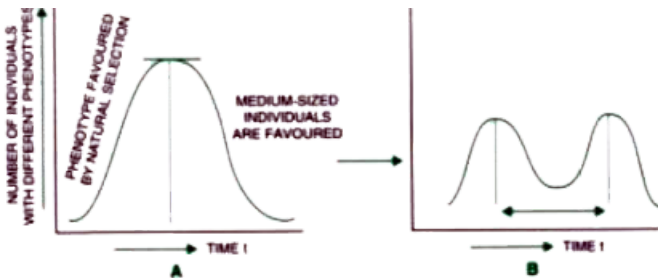
46. Study the figures (A) and (B) given below and answer the questions that follow:



What could be the likely reasons of new variations arising in the population?

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47. Study the figures (A) and (B) given below and answer the questions that follow:



Who suggested Natural Selection as a mechanism of evolution?



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Practice Questions Very Short Answer Type Questions

1. To which star family or galaxy does our solar system belong?



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2. How old is our solar system?



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3. Which were the first probable compound molecules on the earth?



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4. Define light year.



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5. What do you know about meteorites?



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6. When did Archaeobacteria evolve?



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7. Mention the type of evolution that has brought the similarity as seen in potato tuber

and sweet potato.



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8. What does theory of biogenesis define?



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9. Who proposed the theory of chemosynthetic origin of life?



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10. Who termed sea water as "The hot dilute soup' during the course of evolution?



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11. Who were first oxygenic and aerobic photoautotrophs ?



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12. Name the gases that were found in primitive earth's atmosphere.



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13. Give two examples of homologous organs.



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14. Define organic evolution in three words.



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15. Give two examples of connecting links.



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16. Name the scientist who disproved spontaneous generation theory.



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17. Evolution is a discontinuous process. Is it correct?



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18. Give the three key factors of the modern concept of evolution.



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19. In which areas does the dark melanic species of the peppered moth abound?



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20. What is the cause of sickle-cell anaemia?



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21. List three mechanisms by which variant genotypes can be produced in nature.



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22. Which source of variation is denied to the asexually reproducing organisms and self-fertilising hermaphrodites? Which phenomenon needs to occur to bring about variation in such forms?



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23. What is the significance of the Lederberg's experiment?



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24. Who proposed the theory of origin of species by natural selection?



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25. Which is the common ancestor of old world monkeys, apes and humans?



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26. Name the common ancestor of the great apes and man.



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27. Man descended from monkeys'. Do you agree?



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28. Which is the earliest fossil of prehistoric man?



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29. Name the apes which are the most primitive.



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30. What is the cranial capacity of man?



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31. Where have the fossils of Sivapithecus found?



Watch Video Solution

32. Name the extinct representative of modern man.



Watch Video Solution

33. Name two vestigial structures in man.



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34. Define analogous organs. Give one example.



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35. If you discover a fossil of a bird with scales on the body and teeth in the beak, what would you conclude about its position in the animal kingdom?



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36. Mention one living example of the family Hominidae.



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37. What kind of evidence is afforded by the Darwin's finches in support of organic evolutions?



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38. Name any three structures of animals as an example of homologous organs.



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39. In which part of the world did the early human ancestor *Australopithecus* appear about five million years ago.



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40. What is the diploid number of chromosomes in gorilla, chimpanzee and orangutan.



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41. Name the four nearest present-day mammalian relatives of man from the point of view of organic evolution.



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42. Name one fossil animal which serves as a connecting link. Which two groups does it connects?



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43. List any three special abilities of humans which have evolved due to large-sized brain.



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44. Give in a chronological order the names of the different species in the evolution of the genus Homo.



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45. Explain the term 'reproductive isolation' .
Give one example.



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46. Which chromosomes in humans and chimpanzee show an identical banding pattern?



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47. Cite two examples of developmental evidence for evolution from plant-kingdom.



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48. Why are the wings of a butterfly and of a bat called analogous organs?



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49. Why is Peripatus called a connecting link?



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50. Darwin's theory is popularly known as 'theory of natural selection'. How is Lamarck's

theory known as?



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51. Name the naturalist who put forward the theory of natural selection along with Darwin.



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52. Name the phenomenon by which 'rapid speciation' can take place.



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53. Name the mechanism by which new alleles appear in a population.



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54. Who proposed recapitulation theory?



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55. Name any two breeds of wild rock pigeon that have been developed through artificial selection.



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56. What causes speciation according to Hugo-de-Vries ?



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57. Name any two vertebrate body parts that are homologous to human forelimbs.



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58. Name the scientists who experimentally rejected the theory of abiogenesis.



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1. What are eobionts?



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2. What is big bang?



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3. What is the possibility of life existing elsewhere in the space?



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4. Mention any one striking similarity that is found in the embryos of all vertebrates at an early stage. What is it indicative of?



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5. Give the role of sun in the origin and evolution of life .



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6. A cytologist found that the banding pattern in chromosomes of gorilla and man was similar. What inferences can be drawn from this?



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7. Give four features in which human beings are considered more advanced than apes.



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8. Write briefly about the two processes leading to the formation of new species.



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9. What aspect of organic evolution is represented by the variation in the breeds of domestic pigeon? Give a similar example from the plants.



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10. Classify the following into analogous and homologous organs:

Trunk of an elephant and hand of chimpanzee



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11. Classify the following into analogous and homologous organs:

Wing of a bat and wing of an insect



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12. Classify the following into analogous and homologous organs:

Tendrils of pea and spines of cactus



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13. Classify the following into analogous and homologous organs:

Nails of humans and claws of animals



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14. Explain any two palaeontological evidences in favour of organic evolution.



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15. How is sickle-cell carrier has an advantage over the rest of the human population in a malaria-ridden area?



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16. A chimpanzee can hold objects by its hands and an elephant by its tusks. Are these two organs analogous or homologous? Give reason in support of your answer.



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17. What is artificial selection in terms of evolution? Name plant that has been produced as a result of artificial selection.



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18. List the two main propositions of Oparin and Haldane.



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Practice Questions Short Answer Type li
Questions

1. Give some facts about the universe.



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2. What is evolution? Give two main causes of evolution.



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3. How the formation of nucleoproteins considered significant for the origin of life on earth?



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4. Define analogous organs. Give one example of an analogous organ.



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5. List the main concepts in Darwin's theory of natural selection.



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6. Name the immediate ancestor of present man. List two similarities on the chromosomes an man and great apes, which point to be common origin.



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7. Birds have evolved from reptiles. How does Palaeontology provide evidence in support of this statement?



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8. What is the study of fossils called? Mention any three points on how the fossils throw light on past life.



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9. What is phylogeny? Which evidence of evolution helps best in tracing phylogeny?



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10. What is the meaning of term 'differential reproduction' as applied in Darwin's theory of natural selection?



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11. How were exact replicas of the master plate obtained in Lederberg's replica plating experiment? How does it support the Darwinian view on the mechanism of organic evolution?



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12. State the advantages that erect posture and large brain volume gave humans over other primates.



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13. Enumerate any three major differences between humans and apes.



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14. Taking the example of gill clefts mention how the embryological evidence supports the theory of organic evolution.



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15. Describe the significance of Archaeopteryx in the study of organic evolution.



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16. How would you account for the occurrence of sickle-cell anaemia in human population?



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17. Why is the wing of a bat said to be homologous to the wing of a bird and analogous to the wing of an insect?



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18. How does embryological evidence reinforce the view that living organisms have evolved? Give one example from animals.



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19. What is differential reproduction? How does it lead to adaptation?



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20. Why are most mosquitoes now found to be DDT resistant although DDT was known to be a highly effective insecticide in the past?



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21. State Lamarck's theory of evolution. Explain it by quoting an example. Who disproved it and how ?



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22. Describe briefly the difference between geographical isolation and reproductive isolation of two populations of organisms.



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23. What is the role of variation in evolution?



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24. What is speciation? How does it occur?





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25. Describe natural selection with reference to industrial melanism.



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



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27. Define homologous organs. Give one example of an organ homologous to the hand of man.



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28. What are fossils? What is the importance of fossils in organic evolution?



[Watch Video Solution](#)

29. Industrial melanism in peppered moth is an excellent example of natural selection in the recent history'. Justify this statement.



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30. Mention the contribution of SL Miller's experiments on origin of life.



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1. List the important features of water that may have favoured the origin of life in water.



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2. Briefly describe the steps involved in the origin of life on the earth.



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3. Discuss the various problems associated with the tracing of human evolution.



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4. Trace the sequence of stages in the evolution of hominids.



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5. What were the selection pressures that produced bipedal locomotion in hominids?



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6. Discuss the trends in primate evolution that began as adaptation for life in the trees.



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7. Why are the apes of the past regarded remote ancestors of man? Comment upon two fossil apes which might have been representatives of the direct line of human evolution.



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8. Discuss the significance of palaeontological evidences in the study of organic evolution.



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9. How do morphological and anatomical evidences support organic evolution? Explain with examples.



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10. What is vestigial organ? How does the presence of vestigial organs support the doctrine of organic evolution?



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11. Describe Lederberg's replica plating experiment to explain genetic basis of adaptations in bacteria.



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12. Who put forward the theory of natural selection? Explain the concept of differential reproduction as a major component of this theory.



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13. What are homologous organs? How do they differ from the analogous organs? How does the study of comparative anatomy provide evidence in favour of organic evolution?



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14. What is organic evolution? Explain how homologous, analogous and vestigial organs support it by giving one example of each.



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15. What is chemosynthesis? Name a chemosynthetic organisms.



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16. What is meant by bio-geographical evidence in favour of organic evolution?



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17. Describe Lamarckism. Explain why is it alternately called the 'Theory of Acquired Characters' or 'Theory of use and disuse of organs'.



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18. Explain the phenomenon of natural selection as presently understood. Mention two examples of this phenomenon.



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19. Why are genetic variability essential for a species to survive? Name the main source of genetic variation. How do these sources work?



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20. Mention any four details that can be inferred about organisms from their fossils.



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21. Define biogeography. How do Darwin's finches provide the biogeographical evidence in favour of evolution?



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22. What is meant by homologous organs? Taking a suitable example, explain how do they support the theory of organic evolution.



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23. What is meant by analogous organs?

Taking a suitable example, explain how do they support the theory of organic evolution?



Watch Video Solution

24. How does a population become founder's of a new species?



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25. How has the study of fossils helped in convincing the scientists that organisms have come into existence through evolution?



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26. Write the Oparin and Haldane's hypothesis about the origin of life on the earth. How does meteorite analysis favour this hypothesis?



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Previous Year S Board Paper Questions Very Short Answer Type Questions

1. Define palaeontology.



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2. Name the first formed category of photosynthetic organisms.



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3. Define homologous organs.



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4. Define coacervates.



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5. Differentiate between connecting link and missing link.



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6. What is adaptive radiation?



Watch Video Solution

7. What is phylogeny?



Watch Video Solution

8. What is founder effect?



Watch Video Solution

9. What is the difference between the teeth of apes and the teeth of man?



Watch Video Solution

10. Name the scientist who discovered the fossil of Cro-Magnon man.



Watch Video Solution

11. Define protobionts.



Watch Video Solution

12. What is cognogeny?



Watch Video Solution

13. Define biogenesis.



Watch Video Solution

14. Define fossils.



Watch Video Solution

15. State Hardy Weinberg's principle.



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16. Differentiate between Directional natural selection and Disruptive natural selection.



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17. Name the common ancestor of apes and man.



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18. Give one significant contribution of Wallace.



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19. Give one significant contribution of G. Gamow.



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Previous Year S Board Paper Questions Short Answer Type L Questions

1. Why is abiotic synthesis not possible under present day condition?



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2. The wing of a bat said to be homologous to the wing of a bird and analogous to the wing of an insect. Why?



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3. Give two characteristic features of Ramapithecus



[Watch Video Solution](#)

4. Give two characteristic features of Cro-Magnon man



[Watch Video Solution](#)

Previous Year S Board Paper Questions Short Answer Type Li Questions

1. Why is the wing of a bat said to be homologous to the wing of a bird and analogous to the wing of an insect?



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2. Give any three characters that have developed during human evolution.



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3. Explain the evolution of giraffe's neck according to Lamarck's theory of evolution.



[Watch Video Solution](#)

4. Mention three features of the Neanderthal Man.



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5. Give an account of Lederberg's replica plating experiment to show the genetic basis of evolution.



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6. Differentiate between Apes and Man with respect to the following characteristics:

(i) Posture

(ii) Brow ridges

(iii) Cranial capacity



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7. Explain any three molecular (genetic) evidences in favour of organic evolution.



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8. List any three drawbacks of Darwinism



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9. Describe natural selection with reference to industrial melanism.



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10. Explain the evolution of long neck of giraffe according to Charles Darwin.



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Previous Year S Board Paper Questions Long Answer Type Questions

1. Describe the Oparin-Haldane Theory of the Origin of Life.



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2. State three differences between homologous and analogous organs and give an example of each.



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Review Questions

1. Give one significant difference between Living beings and nonliving objects



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2. Give one significant difference between Homologous organs and Analogous organs



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3. Give one significant difference between Progressive and Retrogressive evolutionary trends .



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4. Which was not present in primitive atmosphere?

A. Methane

B. Ammonia

C. Water

D. None of these

Answer:



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5. Echidna and Ornithorhynchus are the connecting links between

- A. Amphibians and Aves
- B. Mammals and Amphibians
- C. Reptiles and Mammals
- D. Reptiles and Amphibians

Answer:



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6. Continuity of germplasm' theory was given by

A. Hugo de Vries

B. Weismann

C. Darwin

D. Lamarck

Answer:



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7. Which one of the following characters in birds indicates their reptilian ancestry?

A. Scales on their hindlimbs

B. Four-chambered heart

C. Two special chambers, crop and gizzard
in their digestive tract

D. Eggs with a calcareous shell

Answer:



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8. Mention one significant function of the Parchment paper in Redi's experiment.



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9. Mention one significant function of the Electric spark in Miller and Urey's experiment.



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10. State the best known contribution of Louis Pasteur



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11. State the best known contribution of A.I. Oparin



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12. State the best known contribution of Richard Owen



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13. State the best known contribution of Ernst Haeckel



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14. Expand the RNA



Watch Video Solution

15. Expand the DNA



Watch Video Solution

16. Describe vestigial organs with suitable examples.



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17. Why is abiotic synthesis not possible under present condition?



Watch Video Solution

18. Describe the Operin-Haldane theory of the origin of life



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**Competition Corner Objective Type Questions
Multiple Choice Questions Mcqs**

1. An evolutionary process, giving rise to new species adapting to new habitat and ways of life is called

- A. Adaptive radiation
- B. Adaptation
- C. Convergent evolution
- D. Microevolution

Answer: A



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2. Hardy-Weinberg equilibrium is known to be affected by gene flow, genetic drift, mutation, genetic recombination and

A. Evolution

B. Limiting factors

C. Saltation

D. Natural selection

Answer: D



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3. Industrial melanism was highlighted by

A. *Mimosa pudica*

B. *Triticum aestivum*

C. *Biston betularia*

D. Rock python

Answer: C



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4. 'A brief reduction in size of a population due to natural calamities usually leads to random genetic drift'. For this statement, identify the correct example from the following

- A. Human population of Pitcairn island
- B. Polydactylic dwarfs in Amish population
- C. Long-necked giraffe
- D. Industrial melanism

Answer: B



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5. Which of the following is not a concept of Lamarck?

A. Environmental pressure causes variation

B. Rate and survival of organism in different due to variation

C. Inheritance of acquired characters

D. If an organ is used constantly it will continuously increase its size

Answer: B



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6. The theory of use and disuse of organ was proposed by

A. Darwin

B. Lamarck

C. de Vries

D. Hooker

Answer: B



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7. Change of frequency of alleles in a population results in evolution is proposed

- A. Darwin's theory
- B. Lamarck's theory
- C. Hardy-Weinberg principle
- D. de Vries theory

Answer: B



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8. Ontogeny recapitulates phylogeny, this theory is called

- A. Biogenetic law
- B. Law of embryology
- C. Law of acquired characters
- D. Law of bridges

Answer: A



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9. Biological concept of species is mainly based on

- A. Reproductive isolation
- B. Morphological features only
- C. Methods of reproduction only

D. Morphology and methods of reproduction

Answer: A



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10. The modern man differs from the apes in

A. Protruding eyes

B. Sparse body hair

C. Wearing of clothes

D. Arms shorter than legs

Answer: D



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11. Which of the following is the most primitive ancestor of man?

A. Homo neanderthafensis

B. Homo habilis

C. Ramapithecus

D. Australopithecus

Answer: C



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12. The highest cranial capacity is/was present
in

A. Java man

B. Peking man

C. Handy man

D. Modern man

Answer: D



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13. First mammal occurred in which eral period?

A. Permian-Palaeozoic

B. Triassic-Mesozoic

C. Tertiary-Coenozoic

D. None of these

Answer: B



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14. The brain capacity of Homo erectus was

A. 800 cc

B. 900 cc

C. 1200 cc

D. 1400 cc

Answer: B



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15. Convergent evolution is shown by

A. Homologous organs

B. Analogous organs

C. Vestigial organs

D. All of thes

Answer: B



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16. Theory of continuity of germplasm was propounded by

A. Mendel

B. Lamarck

C. Weismann

D. Haeckel

Answer: C



17. Who postulated the mutation theory?

- A. GJ Mendel
- B. Charles Darwin
- C. J B Lamarck
- D. Hugo de Vries

Answer: D



18. The results of Miller's experiments were discussed in the book 'The Planets' written

A. Sayere

B. Harold Urey

C. Huxley

D. Stanley

Answer: B



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19. Origin of life occurred in

A. Precambrian

B. Coenozoic

C. Palaeozoic

D. Mesozoic

Answer: A



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20. According to abiogenesis, life originated from

A. Non-living

B. Pre-existing life

C. Chemicals

D. Extra-terrestrial matter

Answer: A



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21. The ratio of methane, ammonia and hydrogen in Stanley Miller's experiment was

A. 3:1:2

B. 2:1:2

C. 1:2:1

D. 5:4:1

Answer: B



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22. Urey-Miller's experiment mixture had the following except

A. Methane

B. CO_2

C. Hydrogen

D. Water vapour

Answer: B



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23. Peripatus is a connecting link between

A. Ctenophora and Platyhelminthes

B. Mollusca and Echinodermata

C. Annelida and Arthropoda

D. Coelenterata and Porifera

Answer: C



Watch Video Solution

24. Echidna and Ornithorhynchus are the connecting links between

- A. Amphibians and aves
- B. Mammals and amphibians
- C. Reptiles and mammals
- D. Reptiles and amphibians

Answer: C



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25. Convergent evolution is shown by

A. Homologous organ

B. Analogous organ

C. Vestigial organ

D. All of these

Answer: B



Watch Video Solution

26. Connecting link between Annelida and Mollusca is

A. Peripatus

B. Lepidosiren

C. Neopilina

D. Protopterus

Answer: C



Watch Video Solution

27. The Mesozoic era is also called as

- A. The golden age of the amphibians
- B. The golden age of the reptiles
- C. The golden age of the mammals
- D. The golden age of the birds

Answer: B



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28. 'Ontogeny Recapitulates Phylogeny' is narrated in which of the evidences for organic evolution?

A. Palaeontological evidence

B. Physiological evidence

C. Embryological evidence

D. Anatomical evidence

Answer: C



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29. Darwin proposed the theory of

A. Inheritance of acquired characters

B. Natural selection

C. Recapitulation

D. Continuity of germplasm

Answer: B



Watch Video Solution

30. Which of the following is not Darwin's conclusion?

A. Survival of the fittest

B. Struggle for existence

C. Inheritance of acquired characters a

D. Origin of species by natural selection

Answer: C



Watch Video Solution

31. 'Darwin's finches' refers to

A. Fossils of birds collected by Darwin at
Galapagos islands

B. A type of birds present on Galapagos
islands

C. Migratory birds collected by Darwin at
Galapagos islands

D. Fossils of reptiles collected by Darwin at
Galapagos islands

Answer: B



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32. Mutation is more common when it is present in

- A. (a) Recessive condition
- B. (b) Dominant condition
- C. (c) Constant in population
- D. (d) None of these

Answer: B



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33. Inheritance of a acquired characters comes under

- A. Lamarckism
- B. Darwinism
- C. Neo-Lamarckism
- D. Neo-Darwinism

Answer: A



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34. Darwin judged the fitness of an individual by

- A. Ability to defend itself
- B. Strategy to obtain food
- C. Number of offsprings
- D. Dominance over other individuals

Answer: C



Watch Video Solution

35. Darwinism explains all the following except

- A. Within each species, there are variations
- B. Organisms tend to produce more number of offspring that can survive
- C. Offspring with better traits that overcome competition are best suited

for the environment

D. Variations are inherited from parents to offspring through genes

Answer: D



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36. Darwin proposed the theory of

A. Inheritance of acquired characters

B. Recapitulation

C. Continuity of gerrnplasm

D. None of the above

Answer: D



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37. Which one of the following was not explained by the Darwinism?

A. Natural selection

B. Struggle for existence

C. Arrival of the fittest

D. Origin of species

Answer: C



Watch Video Solution

38. Which of the following stood erect first?

A. Australopithecus

B. Cromagnon

C. Java-ape man

D. Peking man

Answer: A



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39. Name given to fossil hominid of Shivalik hills in India is

A. Ramapithecus

B. Australopithecus

C. Pithecanthropus

D. Neanderthalensis

Answer: A



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40. The most recent and direct prehistoric ancestor

A. Cromagnon

B. Pre-Neanderthal

C. Neanderthal

D. None of the above

Answer: A



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41. The chronological order of human evolution from early to the recent is

A. Ramapithecus-Australopithecus-Homo habilis-Homo erectus

B. Australopithecus-Ramapithecus-Homo

habilis-Homo erectus

C. Pithecanthropus pekinensis-Homo

habilis-Homo erectus

D. Australopithecus-Ramapithecus

Pithecanthropus pekinensis-Homo

erectus

Answer: A



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42. 'Origin of Species' was written by

A. Lamarck

B. Darwin

C. Linnaeus

D. Oparin

Answer: B



Watch Video Solution

43. Wings of insects and birds are

A. Analogous

B. Homologous

C. Vestigial

D. Atavism

Answer: A



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44. In the early earth, organic acids were produced by the combination of H_2 with

A. Ammonia and methane

B. Hydrogen

C. Organic matter

D. Sulphates and nitrates

Answer: A



Watch Video Solution

45. Darwin's finches are a good example of:

A. Industrial melanism

B. Connecting link

C. Adaptive radiation

D. Convergent evolution

Answer: C



Watch Video Solution

46. Single step large mutation leading to speciation is also called

- A. Founder effect
- B. Saltation
- C. Branching descent
- D. Natural selection

Answer: B



Watch Video Solution

47. The primate, which existed 15 million years ago, among these was

A. Homo habilis

B. Australopithecus

C. Ramapithecus

D. Homo erectus

Answer: C



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48. The scientific name of Java man is

A. Homo habilis

B. Homo sapiens neanderthalensis

C. Homo erectus erectus

D. Australopithecus boisei

Answer: C



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49. Organisms called Methanogens are the most abundant in a

A. Sulphur rock

B. Cattle yard

C. Polluted stream

D. Hot spring

Answer: B



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50. What was the most significant trend in the evolution of modern man (*Homo sapiens*) from his ancestors ?

- A. Upright posture
- B. Shortening of jaws
- C. Binocular vision
- D. Increasing brain capacity

Answer: D



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51. Which of the following had the smallest brain capacity?

- A. Homo erectus
- B. Homo sapiens
- C. Homo neanderthalensis
- D. Homo habilis

Answer: D



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52. 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: A



Watch Video Solution

53. Which of the following structures is analogous to the wing of a bird?

- A. Hind limb of Rabbit
- B. Flipper of Whale
- C. Dorsal fin of a Shark
- D. Wing of a Moth

Answer: B



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54. Analogous structures are a result of

- A. Shared ancestry
- B. Stabilising selection
- C. Divergent evolution
- D. Convergent evolution

Answer: D



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55. Following are the two statements regarding the origin of life

I. The earliest organisms that appeared on the earth were nongreen and presumably anaerobes.

II. The first autotrophic organisms were the chemoautotrophs that never released oxygen.

Of the above statements which one of the following options is correct?

A. Both I and II are correct.

B. Both I and II are false.

C. I is correct but II is false.

D. II is correct but I is false

Answer: A



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Competition Corner Assertion And Reason Type Questions For Aims Aspirants

1. Assertion: Continued use of eyes leads to an improvement of eyesight.

Reason: Isolating mechanisms prevent reproduction even between the members of same species.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: D



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2. Assertion: Primary atmosphere of primitive earth was reducing Reason: Primary atmosphere had abundance of CH_4 , NH_3 and CO_2 but had no free O_2

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: A



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3. Assertion: The mechanism of origin and evolution can be suggested.

Reason: Evidences of origin and evolution of life are available.

A. (a) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. (b) If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. (c) If Assertion is true but the Reason is false.

D. (d) If both Assertion and Reason are false.

Answer: A



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4. Assertion: Life originated in water.

Reason: Primitive waterbodies were alkaline.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: B



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5. Assertion: Mutations are basically different from fluctuations.

Reason: Mutations are sudden discontinuous and large variations, while fluctuations are small and continuous variations.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: A



Watch Video Solution

6. Assertion: Best adapted and less adapted individuals reproduce at the same rate.

Reason: Natural selection favour them equally.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

- B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.
- C. If Assertion is true but the Reason is false.
- D. If both Assertion and Reason are false.

Answer: D



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7. Assertion: Lederberg's experiment explains the genetic basis of adaptations in bacteria.

Reason: Certain bacterial cells become penicillin-resistant in response to penicillin.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: C



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8. Assertion: Ostrich has vestigial wings and feather but is a cursorial animal.

Reason: Ostrich disused the wings for defence.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: A



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9. Assertion: All the animals have three germ layers in their development

Reason: all the animals are triploblastic.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct

explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: D



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10. Assertion: Frog has a fish-like tadpole larva in its life history

Reason: Ontogeny repeats phylogeny.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: A



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11. Assertion: All the living organisms have certain basic similarities.

Reason: The living organisms have monophyletic ancestry.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: A



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12. Assertion: Forelimbs of different vertebrates are basically similar.

Reason: These are functionally similar but have different origin.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: C



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13. Assertion: Dinosaurs were connecting links between reptiles and birds.

Reason: They had characters of two different groups.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: D



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14. Assertion: Many physical and chemical agents induce inheritable mutations.

Reason: Germ cells are not immune to the changes in environmental factors.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: A



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15. Assertion: There is an everlasting competition between individuals having similar requirements.

Reason: Populations tend to multiply arithmetically while food and space increase geometrically.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: C



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16. Assertion: Evolution is adaptation through generations.

Reason: Only useful and continuous variations are inheritable.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: C



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17. Assertion: Natural selection is not the exclusive force of speciation.

Reason: Natural selection is not a creative force.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: A



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18. Assertion: Human evolution occurred in Asia and Africa.

Reason: The earliest fossils of the prehistoric man have been found from the late Miocene of Shivalik hills in India.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: A



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19. Assertion: Among the primates, chimpanzee is the closest relative of modern man.

Reason: The banding pattern in the autosome number 3 and 6 of man and chimpanzee is remarkably similar.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: A



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20. Assertion: Natural selection is the outcome of differences in survival and reproduction among individuals that show variation in one or more traits.

Reason: Adaptive form of a given trait tend to become more common, less adaptive ones become less common or disappear.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: A



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21. Assertion: From evolutionary point of view, human gestation period is believed to be shortening

Reason: One major evolutionary trend in humans has been larger head undergoing faster growth rate in the foetal stage.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: B



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22. Assertion: Amphibians have evolved from fishes.

Reason: Archaeopteryx is a fossil linking fishes and amphibians.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: C



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23. Assertion: Coacervates are believed to be the precursors of life.

Reason: Coacervates were self-duplicating

aggregates of proteins surrounded by lipid molecules.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: C



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24. Assertion: The earliest organisms that appeared on the earth were non-green and presumably anaerobes.

Reason: The first autotrophic organisms were the chemoautotrophs that never released oxygen.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: B



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25. Assertion: The theory of survival of the fittest is widely misunderstood.

Reason: Evolution does not always increase the chances of a species survival and species do not survive when such chances happen rapidly.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: C



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26. Assertion: Human ancestors never used their tails and so the tail-expressing gene has disappeared in them.

Reason: Lamarck's theory of evolution is popularly called theory of continuity of germplasm.

A. If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion

B. If both Assertion and Reason are true and the Reason is not the correct explanation of the Assertion.

C. If Assertion is true but the Reason is false.

D. If both Assertion and Reason are false.

Answer: D



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Multiple Choice Questions

1. What were the first sole living molecules according to Oparin?

- A. Diploid
- B. Coacervates
- C. Mycoplasma
- D. Bacteria

Answer: B



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2. What was the mode of respiration for the prokaryotes during biological evolution?

A. Aerobic

B. Anaerobic

C. Cellular

D. External

Answer: B



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3. Theory of chemical origin of life was prepared by:

- A. Miller and Fox
- B. Oparin and Haldane
- C. Miller and Watson
- D. Watson and Melvin

Answer: B



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4. Coacervates were experimentally produced by:

A. Oparin and Sidney Fox

B. Fischer and Huxley

C. Jacob and Monad

D. Urey and Miller

Answer: A



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5. Which of the following was likely to have been absent in a free molecule state, in the primitive atmosphere of the earth?

A. Carbon

B. Oxygen

C. Hydrocarbon

D. Nitrogen

Answer: B



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6. Theory of spontaneous generation was proposed by:

A. Spallanzani

B. Aristotle

C. F. Redi

D. Louis Pasteur

Answer: B



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7. Evolutionary history of an organism is known as:

A. Ontogeny

B. Phylogeny

C. Ancestry

D. Paleontology

Answer: B



View Text Solution

8. A connecting link between reptiles and birds is -

- A. Dimetrodon
- B. Dodo
- C. Archaeopteryx
- D. Sphenodon

Answer: C



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9. A baby has a small tail. It is a case of:

A. Mutation

B. Metamorphosis

C. Atavism

D. Retrogressive evolution

Answer: C



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10. Analogous organs arise due to:

A. Divergent evolution

B. Artificial selection

C. Genetic drift

D. Convergent evolution

Answer: D



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11. Which of the following pairs of structures is homologous?

- A. Wings of grasshopper and forelimbs of flying squirrel
- B. Tentacles of Hydra and arms of starfish
- C. Forelimbs of bat and forelegs of horse
- D. Wings of birds and wings of moth

Answer: C



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12. Wings of pigeon, bat and mosquito exhibit the phenomenon called:

A. Convergent evolution

B. Divergent evolution

C. Atavism

D. All of these

Answer: A



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13. Wings of bat and bird are:

- A. Homologous but not analogous
- B. Neither homologous nor analogous
- C. Analogous but not homologous
- D. Vestigial

Answer: C



View Text Solution

14. Which one is linked to evolution?

A. Extinction

B. Competition

C. Variation

D. Reproduction

Answer: C



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15. It is known that the total sum of all the frequencies of the allele is:

A. one

B. two

C. three

D. four

Answer: A



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16. The organisms that perform chemosynthesis for survival are called :

A. Chemoautotrophs

B. Chemoheterotrophs

C. Chemical organisms

D. Photoautotrophs

Answer: A



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17. Birbal Sahni Institute of Palaeobotany is located at:

A. Delhi

B. Lucknow

C. Dehradun

D. Kolkata

Answer: B



View Text Solution

18. Who proposed the theory of origin of species by Natural Selection?

A. August Weismann

B. De Vries

C. Charles Darwin

D. Charles Darwin and Alfred Wallace

Answer: C



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19. The unit of natural selection is:

A. an individual

B. a species

C. a germ

D. a population

Answer: A



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20. Industrial melanism is related to:

A. Skin darkening due to smoke

B. Drug resistance

C. Defence against radiation

D. Protective resemblance to surroundings

Answer: D



View Text Solution

21. Darwin's finches are good example of:

A. Connecting link

B. Adaptive radiation

C. Convergent evolution

D. Industrial melanism

Answer: B



View Text Solution

22. Non-directional alteration in Hardy-Weinberg equilibrium is:

A. Gene flow

B. Mutation

C. Genetic drift

D. Gene recombination

Answer: C



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23. Genetic drift operates only in:

A. Island population

B. Smaller population

C. Larger population

D. Mendelian population

Answer: B



View Text Solution

24. Species occurring in different geographical areas are called:

A. Sibling

B. Neopatric

C. Sympatric

D. Allopatric

Answer: D



View Text Solution

25. Cause of speciation is:

A. Random mating

B. Hybridisation

C. Isolation

D. Migration

Answer: C



[View Text Solution](#)

26. The largest unit in which gene flow is possible is:

- A. Organism
- B. Population
- C. Species
- D. Genes

Answer: B



 [View Text Solution](#)

27. The golden age of reptiles is:

A. Palaeozoic

B. Mesozoic

C. Cenozoic

D. Proterozoic

Answer: B



[View Text Solution](#)

28. Hominids originated during

A. Pliocene

B. Paleocene

C. Miocene

D. Oligocene

Answer: C



View Text Solution

29. Appearance of antibiotic-resistant bacteria is an example of:

A. adaptive radiation

B. transduction

C. pre-existing variation in the population

D. divergent evolution

Answer: C



View Text Solution

30. Atmosphere of Earth just before the origin of life consisted of:

A. CH_4 , O_3 , O_2 and water vapour

B. CH_4 , NH_3 , H_2 and water vapour

C. water vapour, CH_4 , NH_3 and oxygen

D. CO_2 , NH_3 and CH_2

Answer: B



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31. Select incorrect statement about origin of life.

A. Present day galaxies are formed by the condensation of hydrogen and helium under gravitational pull.

B. Big Bang theory explained that universe originated by a huge explosion

C. The universe is almost 20 billion years old.

D. None of these

Answer: D



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32. Who proposed that the first form of life come from pre-existing non-living molecules?

A. Darwin and Lamarck

B. Oparin and Haldane

C. Louis Pasteur and Miller

D. de Vries and Haldane

Answer: B



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33. One of the possible early sources of energy was/were:

A. UV rays and lightning

B. green plants

C. CO_2

D. chlorophyll

Answer: A



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34. Information molecule that most likely evolved first on the primitive Earth was:

A. RNA

B. protein

C. DNA

D. All of the above

Answer: A



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35. A study of fossils in different sedimentary layers indicates:

A. physiological period in which they existed

B. conditions in which they were living

C. geological period in which they existed.

D. All of the above

Answer: C



View Text Solution

36. Industrial melanism is an example of:

A. defensive adaptation of skin against ultraviolet radiations

B. drug resistance

C. protective resemblance with the surroundings

D. darkening of skin due to smoke from industries

Answer: C



View Text Solution

37. Which of the following structures is homologous to the wing of a bird?

- A. Hind limb of rabbit
- B. Dorsal fin of a shark
- C. Wing of a moth
- D. Flipper of whale

Answer: D



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38. Evolution of different species in a given area starting from a point and spreading to other geographical areas is known as :

A. divergent evolution

B. natural selection

C. adaptive radiation

D. None of these

Answer: C



View Text Solution

39. Tasmanian wolf is a marsupial while wolf is a placental mammal. This shows:

A. inheritance of acquired characters

B. convergent evolution

C. divergent evolution

D. None of these

Answer: B



View Text Solution

40. Fitness according to Darwin refers to:

A. reproductive fitness of an organism

B. strength of an individual

C. useful variation in population

D. number of species in a community

Answer: A



View Text Solution

41. Study of fossils is called:

A. Herpetology

B. Palaeontology

C. Organic evolution

D. Saurology

Answer: B



View Text Solution

42. Industrial melanism as observed in peppered moth proves that:

A. melanism is a pollution-generated feature

B. the true black melanic forms escaped unnoticed so they managed to survive resulting in more population of black moths

C. the dark melanic form of the moth has no selective advantage over lighter-form in industrial area.

D. the lighter-form moth has no selective advantage either in polluted industrial area or non polluted area.

Answer: B



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43. Which one of the following describes correctly the homologous structures?

A. Organs with anatomical dissimilarities,
but performing same function

B. Organs with anatomical similarities, but
performing different functions

- C. Organs that have no function now, but had an important function in ancestors
- D. Organs appearing only in embryonic stage and disappearing later in the adult.

Answer: B



View Text Solution

44. Choose the wrong statement regarding Hardy Weinberg principle:

A. Variation due to genetic drift results in changed frequency of genes and alleles in future generations.

B. Allele frequencies in a population are stable and constant from generation to generation.

C. Sum total of all the allelic frequencies in a population is 1.

D. Genetic recombination helps in maintaining Hardy-Weinberg equilibrium

Answer: D



View Text Solution

45. Wings of insect and birds are examples of:

A. Analogous

B. Homologous

C. Vestigial

D. Atavism

Answer: A



View Text Solution

46. In Hardy-Weinberg equation, the frequency of heterozygous individual is represented by:

A. p^2

B. $2pq$

C. pq

D. q^2

Answer: B



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47. Single step large mutation leading to speciation is also called:

A. saltation

B. founder effect

C. natural selection

D. branching descent

Answer: A



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48. Which of the following frequency was described by Hardy-Weinberg for an entire population?

A. Phenotype

B. Allele

C. Genotype

D. Genes

Answer: B



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49. Biochemical similarities are based on the study of similarities in:

- A. carbohydrates of organisms.
- B. protein and genes of organisms.
- C. fat (fatty acid) of organisms.
- D. All of the above

Answer: B



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Numericals

1. In a population of 1000 individuals, 360 belong to genotype AA, 480 to Aa and the remaining 160 to aa. Based on this data, the frequency of allele. A in the population is:

A. 0.4

B. 0.5

C. 0.6

D. 0.7

Answer: C



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2. A population is in Hardy-Weinberg equilibrium for a gene with only two alleles. If the gene frequency of an allele A is 0.7, the genotype frequency of Aa is:

A. 0.21

B. 0.42

C. 0.36

D. 0.7

Answer: B



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Choose The Odd One Out

1. Which of the following is odd one out with reference to marsupials of Australia?

- A. Adaptive radiation
- B. Divergent evolution
- C. Convergent evolution

D. Both (a) and (c)

Answer: D



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2. Which of the following is odd one out with reference to concepts of Darwinian Theory of Evolution?

A. Natural selection

B. Branching descent

C. Darwinism

D. Lamarckism

Answer: A



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Fill In The Blanks

1. The A from the sun broke up water into hydrogen and oxygen and the B escaped. Oxygen combined with

ammonia and methane to form C
....., CO_2 , and others. The ozone layer was
formed. As it cooled, the water vapour fell as
rain, to fill all the depressions and form
.....D.....

A. A-IR rays, B-lighter H_2 , C-water, D- oceans

B. A-UV rays, B- lighter H_2 , C-water, D-
oceans

C. A-IR rays, B-heavier H_2 , C-water, D-oceans

D. A-UV rays, B-heavier H_2 , C-water, D-
oceans

Answer: B



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2. When migration of a section of population to another place and population occurs,

A.... change in the original as well as in the new population. New genes/alleles are

added to theB..... population and

these are lost from theC.....

population: There would be a D..... if

this gene migration, happens multiple times. If

the same change occurs by chance, it is called

..... E

A. A-natural selection, B-new, C-old, D-gene

flow, E-gene frequencies

B. A-gene frequencies, B-old, C-new: D-

natural selection, E-gene flow

C. A-gene frequencies, B-new, C-old, D-gene

flow, E-genetic drift

D. A-mutations, B-old, C-new, D-natural

selection, E-gene flow

Answer: C



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3. is the evolution from coacervates to simple cell structure.

A. Chemical evolution

B. Biological evolution

C. Organic evolution

D. Inorganic evolution

Answer: B



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4. Analogous structures are a result ofA..... whereas homology is based onB.....

A. A-adaptive radiation, B-divergent evolution

B. A-convergent evolution, B-divergent evolution

C. A-divergent evolution, B-adaptive radiation

D. A-natural selection, B-adaptive radiation

Answer: B



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5. The bones of forelimbs of whale, bat, cheetah, and man are similar in structure, because

- A. one organism has given rise to another
- B. they share a common ancestor
- C. they perform the same function
- D. they have biochemical similarities

Answer: B



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6. The 'Devonian period' is considered to be as age of

A. mammals

B. reptiles

C. amphibians

D. fishes

Answer: D



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7. Analogous organs arise due to

A. divergent evolution

B. artificial selection

C. genetic drift

D. convergent evolution

Answer: D



View Text Solution

8. Fossils are generally found in

A. Sedimentary rocks

B. Igneous rocks

C. Metamorphic rocks

D. Any type of rock

Answer: A



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9. Palaeontological evidences for evolution refer to the

A. Development of embryo

B. Homologous organs

C. Fossils

D. Analogous organs

Answer: C



View Text Solution

10. is used as an atmospheric pollution indicator.

A. Lepidoptera

B. Lichens

C. Lycopersicon

D. Lycopodium

Answer: B



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Match

1. Match the Column I with Column II and select the correct option:

	Column I		Column II
(A)	Potato and sweet potato	(i)	Evidence from palaeontology
(B)	Marsupials of Australia	(ii)	Evidence from anatomy and morphology
(C)	Footprints of dinosaur	(iii)	Adaptive radiation

A. (A)-(ii), (B)-(iii), (C)-(i)

B. (A)-(iii), (B)-(ii), (C)-(i)

C. (A)-(i), (B)-(i), (C)-(iii)

D. (A)-(iii), (B)-(i), (C)-(ii)

Answer: A



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2. Match the Column I with Column II and select the correct option:

	Column I		Column II
(A)	Mutation	(i)	Immigration and emigration change allele frequencies.
(B)	Natural selection	(ii)	Change in population's allele frequencies due to chance alone.
(C)	Genetic drift	(iii)	Source of new alleles.
(D)	Gene flow	(iv)	Differences in survival and reproduction among variant individuals.

A. A-(ii),B-(iv),C-(iii),D-(i)

B. A-(iii),B-(iv),C-(i),D-(ii)

C. A-(ii),B-(i),C-(iv),D-(iii)

D. A-(iii),B-(iv),C-(ii),D-(i)

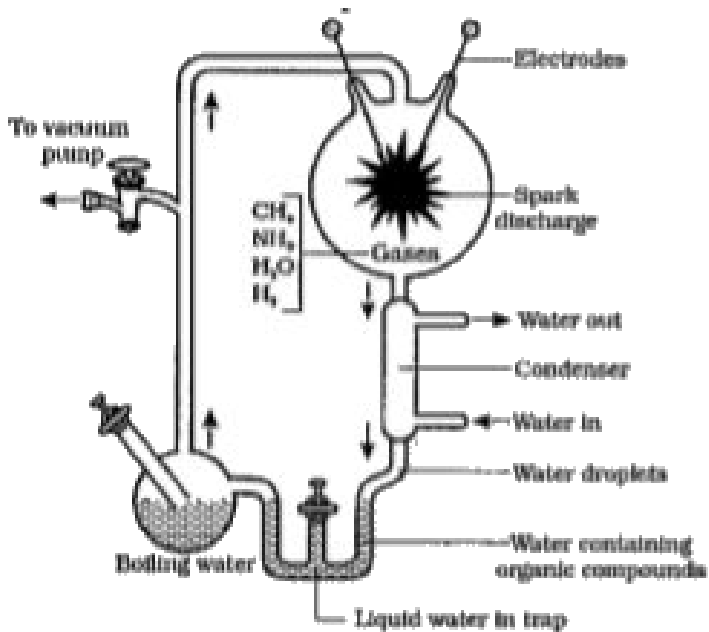
Answer: D



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Figure Based

1. The given diagram represents the :



A. Louis Pasteur's experiment

B. Miller's experiment

C. Oparin's experiment

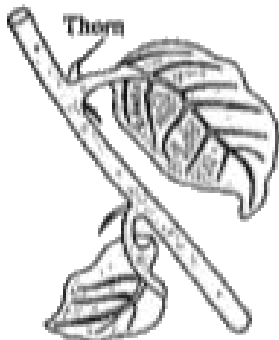
D. None of these

Answer: B

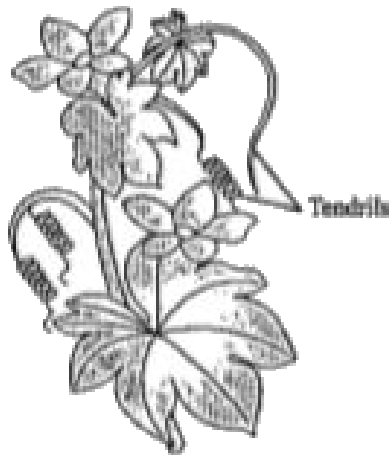


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2. The given figure shows an example of:



Bougainvillea



Cucurbita

A. Homologous organs

B. Divergent evolution

C. Convergent evolution

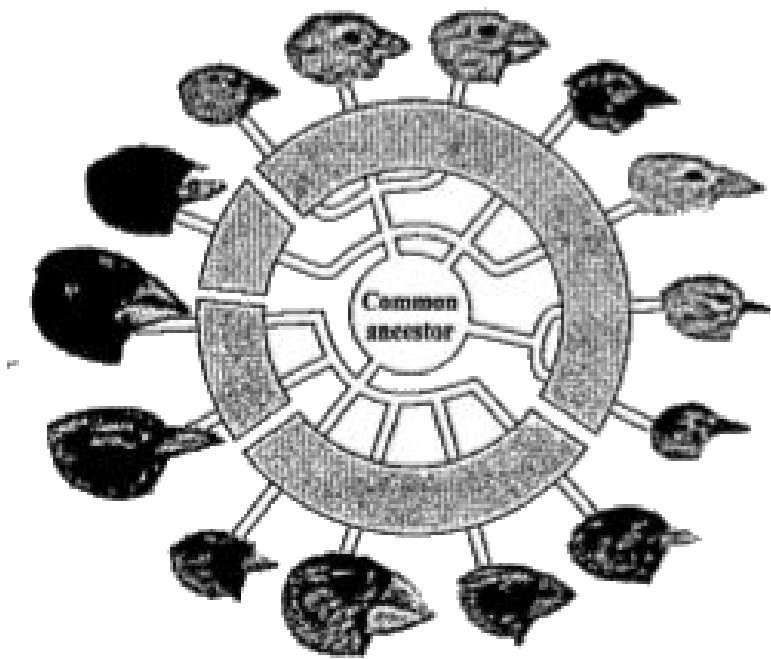
D. Both (a) and (b)

Answer: D



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3. Identify what is indicated in the given diagram?



- A. Natural selection
- B. Adaptive radiation
- C. Ecological succession
- D. none of these

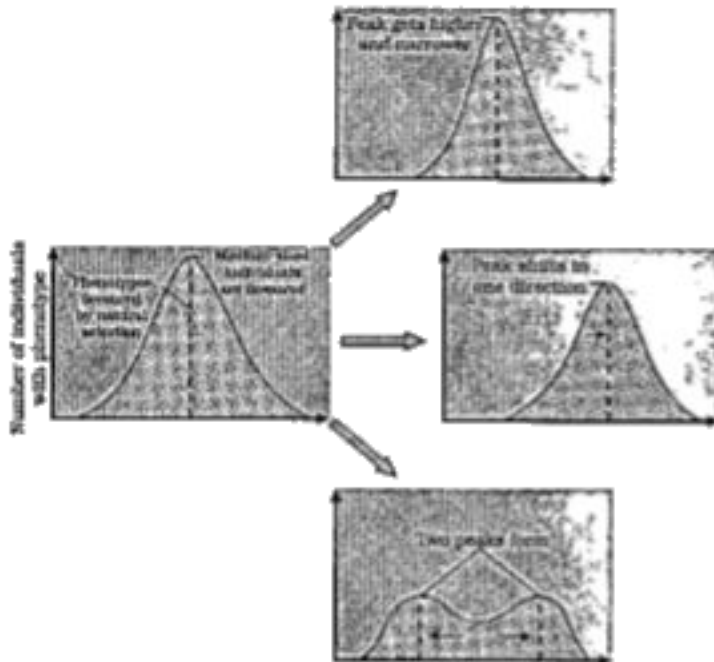
Answer: A



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4. Following is the diagrammatic representation of the operation of natural selection of different traits. Which of the following options correctly identifies all the

three graphs, A, B, and C?



A. Directional, Stabilising, Disruptive

B. Stabilising, Directional, Disruptive

C. Disruptive, Stabilising, Directional

D. Directional, Disruptive, Stabilising

Answer: B



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Assertion And Reason

1. Assertion : Organic compounds first evolved in Earth required for origin of life were protein and nucleic acid.

Reason: All life forms were in water environment only.

A. Both assertion and reason are true and reason is the correct explanation of assertion.

B. Both assertion and reason are true, but reason is not the correct explanation of assertion.

C. Assertion is true, but reason is false.

D. Both assertion and reason are false.

Answer: B



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2. Assertion : Thorns and tendrils of Bougainvillea and Cucurbita represent homology.

Reason: Homologous organs have similar functions but are different in their structural details and origin.

A. Both assertion and reason are true and reason is the correct explanation of assertion.

B. Both assertion and reason are true, but reason is not the correct explanation of assertion.

C. Assertion is true, but reason is false.

D. Both assertion and reason are false.

Answer: C



View Text Solution

3. Assertion : Whales and mammals share similarities in the pattern of bones of fore limbs.

Reason : These organisms developed along different directions due to adaptations to different needs.

A. Both assertion and reason are true and reason is the correct explanation of assertion.

B. Both assertion and reason are true, but reason is not the correct explanation of assertion.

C. Assertion is true, but reason is false.

D. Both assertion and reason are false.

Answer: A



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4. Assertion : Analogous structures are different in appearance having same function.

Reason: Divergent evolution leads to analogy.

A. Both assertion and reason are true and reason is the correct explanation of assertion.

B. Both assertion and reason are true, but reason is not the correct explanation of assertion.

C. Assertion is true, but reason is false.

D. Both assertion and reason are false.

Answer: C



View Text Solution

5. Assertion : Hardy-Weinberg principle is directional

Reason: Hardy-Weinberg principle is applicable only when genetic drift occurs.

A. Both assertion and reason are true and reason is the correct explanation of assertion.

B. Both assertion and reason are true, but reason is not the correct explanation of assertion.

C. Assertion is true, but reason is false.

D. Both assertion and reason are false.

Answer: D



View Text Solution

Source Based

1. Read the passages and answer the questions that follow:

Mutation is a driving force of evolution that involves random change in an organism's genetic makeup, and influences the population's gene pool. It is a change in the nature of the DNA in one or more chromosomes. Mutations give rise to new alleles, therefore, they are a source of genetic

variation in a population

Mutations may be harmful or benign, but they may also be beneficial. For example, a mutation may permit organisms in a population to produce enzymes that will allow them to use certain food materials. Whether or not a mutation is beneficial or harmful is determined by whether it helps an organism survive to sexual maturity and reproduce. Over time, these types of individuals survive, while those that don't have the mutations are more likely to perish. Therefore, natural selection tends to remove the less-fit individuals,

allowing more-fit individuals to survive and form a population.

Hugo de Vries did an experiment on which plant to prove mutation theory?

- A. Evening primrose
- B. Morning primrose
- C. Night primrose
- D. Pea plant

Answer: A



View Text Solution

2. Read the passages and answer the questions that follow:

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Which of the following does not belong to Mutation theory?

- A. It can appear in all direction
- B. It is the raw material of evolution
- C. It appears suddenly
- D. It is a continuous process

Answer: D



View Text Solution

3. Read the passages and answer the questions that follow:

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For evolutionary success mutation must occur

in:

A. Somatic RNA

B. Somatic DNA

C. Germplasm DNA

D. Germplasm RNA

Answer: C



View Text Solution

4. Read the passages and answer the questions that follow:

Mutation is a driving force of evolution that involves random change in an organism's genetic makeup, and influences the population's gene pool. It is a change in the nature of the DNA in one or more chromosomes. Mutations give rise to new alleles, therefore, they are a source of genetic variation in a population

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mutation may permit organisms in a population to produce enzymes that will allow them to use certain food materials. Whether or not a mutation is beneficial or harmful is determined by whether it helps an organism survive to sexual maturity and reproduce. Over time, these types of individuals survive, while those that don't have the mutations are more likely to perish. Therefore, natural selection tends to remove the less-fit individuals, allowing more-fit individuals to survive and form a population.

Sudden heritable changes are called:

A. Mutations

B. Variations

C. Recombination

D. Evolution

Answer: A



View Text Solution

5. Read the passages and answer the questions that follow:

Mutation is a driving force of evolution that

involves random change in an organism's genetic makeup, and influences the population's gene pool. It is a change in the nature of the DNA in one or more chromosomes. Mutations give rise to new alleles, therefore, they are a source of genetic variation in a population

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determined by whether it helps an organism survive to sexual maturity and reproduce. Over time, these types of individuals survive, while those that don't have the mutations are more likely to perish. Therefore, natural selection tends to remove the less-fit individuals, allowing more-fit individuals to survive and form a population.

Which of the following point favour mutation theory?

A. Mutations are not very common

B. Mutations are mostly recessive

C. Mutation give rise to new varieties

D. Evening primrose is not a normal plant

Answer: C



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6. Evolution is the change in heritable traits of biological populations over successive generations. Evolutionary processes give rise to diversity at every biological organization level. All life on earth shares a common

ancestor known as the last universal ancestor. In the mid-19th century, Charles Darwin formulated the scientific theory of evolution by natural selection, while in the early 20th century the modern evolutionary synthesis integrated classical genetics with Darwin's theory of evolution by natural selection through the discipline of population genetics.

The Origin of Species was written by

- A. Charles Darwin
- B. Ludmila Kuprianova
- C. Mikhail A. Fedonkin

D. None of the above

Answer: A



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7. Evolution is the change in heritable traits of biological populations over successive generations. Evolutionary processes give rise to diversity at every biological organization level. All life on earth shares a common ancestor known as the last universal ancestor.

In the mid-19th century, Charles Darwin formulated the scientific theory of evolution by natural selection, while in the early 20th century the modern evolutionary synthesis integrated classical genetics with Darwin's theory of evolution by natural selection through the discipline of population genetics.

The force that initiates evolution is

A. Variation

B. Mutation

C. Extinction

D. Adaptation

Answer: A



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8. Evolution is the change in heritable traits of biological populations over successive generations. Evolutionary processes give rise to diversity at every biological organization level. All life on earth shares a common ancestor known as the last universal ancestor.

In the mid-19th century, Charles Darwin formulated the scientific theory of evolution by natural selection, while in the early 20th century the modern evolutionary synthesis integrated classical genetics with Darwin's theory of evolution by natural selection through the discipline of population genetics. Change of frequency of alleles in a population results in evolution. This statement is proposed in:

A. Darwin's theory

B. Lamarck's theory

C. Hardy-Weinberg principle

D. De Vries theory

Answer: C



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9. Evolution is the change in heritable traits of biological populations over successive generations. Evolutionary processes give rise to diversity at every biological organization level. All life on earth shares a common

ancestor known as the last universal ancestor.

In the mid-19th century, Charles Darwin formulated the scientific theory of evolution by natural selection, while in the early 20th century the modern evolutionary synthesis integrated classical genetics with Darwin's theory of evolution by natural selection through the discipline of population genetics.

Theory of inheritance of acquired characters was given by:

A. Wallace

B. Darwin

C. De Vries

D. Lamarck

Answer: D



View Text Solution

10. Evolution is the change in heritable traits of biological populations over successive generations. Evolutionary processes give rise to diversity at every biological organization level. All life on earth shares a common

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In the mid-19th century, Charles Darwin formulated the scientific theory of evolution by natural selection, while in the early 20th century the modern evolutionary synthesis integrated classical genetics with Darwin's theory of evolution by natural selection through the discipline of population genetics.

The earliest geological time period among the following is

A. Cambrian

B. Permian

C. Jurassic

D. Quaternary

Answer: A



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11. Comparative anatomy is the study of the similarities and differences in the structures of different species. Similar body parts may be homologies or analogies. Both provide evidence for evolution. Just as Darwin did

many years ago, today's scientists study living species to learn about evolution. They compare the anatomy, embryos, and DNA of modern organisms to understand how they evolved. In the case of phylogeny, evolutionary investigations focus on two types of evidence: morphologic (form and function) and genetic. In general, organisms that share similar physical features and genomes tend to be more closely related than those that do not.

Example of a homologous organ:

A. The arm of a human, wing of a bird

B. Wing of an insect, wing of a bird

C. Leg of a dog, leg of a spider

D. None of the above

Answer: A



View Text Solution

12. Comparative anatomy is the study of the similarities and differences in the structures of different species. Similar body parts may be homologies or analogies. Both provide

evidence for evolution. Just as Darwin did many years ago, today's scientists study living species to learn about evolution. They compare the anatomy, embryos, and DNA of modern organisms to understand how they evolved. In the case of phylogeny, evolutionary investigations focus on two types of evidence: morphologic (form and function) and genetic. In general, organisms that share similar physical features and genomes tend to be more closely related than those that do not. Homologous organs indicate:

A. convergent evolution

B. divergent evolution

C. adaptive radiation

D. natural selection

Answer: B



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13. Comparative anatomy is the study of the similarities and differences in the structures of different species. Similar body parts may be

homologies or analogies. Both provide evidence for evolution. Just as Darwin did many years ago, today's scientists study living species to learn about evolution. They compare the anatomy, embryos, and DNA of modern organisms to understand how they evolved. In the case of phylogeny, evolutionary investigations focus on two types of evidence: morphologic (form and function) and genetic. In general, organisms that share similar physical features and genomes tend to be more closely related than those that do not.

An example of convergent evolution is:

- A. Wing of Hawkmoths, the wing of hawks
- B. Teeth of domestic dog, teeth of a wolf
- C. Wings of *Geospiza magnirostris*, wings of *Geospiza fortis*
- D. None of the above

Answer: A



View Text Solution

14. Comparative anatomy is the study of the similarities and differences in the structures of different species. Similar body parts may be homologies or analogies. Both provide evidence for evolution. Just as Darwin did many years ago, today's scientists study living species to learn about evolution. They compare the anatomy, embryos, and DNA of modern organisms to understand how they evolved. In the case of phylogeny, evolutionary investigations focus on two types of evidence: morphologic (form and function) and genetic.

In general, organisms that share similar physical features and genomes tend to be more closely related than those that do not.

Analogous organs arise due to:

- A. divergent evolution
- B. artificial selection
- C. genetic drift
- D. convergent evolution

Answer: D



View Text Solution

15. Comparative anatomy is the study of the similarities and differences in the structures of different species. Similar body parts may be homologies or analogies. Both provide evidence for evolution. Just as Darwin did many years ago, today's scientists study living species to learn about evolution. They compare the anatomy, embryos, and DNA of modern organisms to understand how they evolved. In the case of phylogeny, evolutionary investigations focus on two types of evidence:

morphologic (form and function) and genetic.

In general, organisms that share similar physical features and genomes tend to be more closely related than those that do not.

Identify the examples of convergent evolution from the following:

A. Flippers of penguins and dolphins

B. Eyes of Octopus and mammals

C. Vertebrate brains

D. Both (a) and (b)

Answer: D



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16. Hardy - Weinberg Principle mathematically explains the occurrence and consistency of gene frequency for a particular gene. The principle states that the allelic frequency remains constant through generations and the gene pool remains constant. This phenomenon is called genetic equilibrium. Various factors contribute to the change in gene frequency of a species in an area. If a few individuals from a species migrate to another

place, the gene frequency changes again. It decreases from the place from where the individuals migrate and increase in the place they migrate to. If the frequency of the genes is high enough in the newly migrated land to start a new species, the migrated individuals become the founder species, and the effect is called the founder effect. Thus, it contributes to the process of evolution.

Which of the following represents the Hardy Weinberg equation?

A. $p^2 + q^2 = 1$

$$\text{B. } p^2 + 2pq + q^2 = 1$$

$$\text{C. } p^2 + q^2 = 0$$

$$\text{D. } (p^2 + q^2)^2 = 1$$

Answer: B



View Text Solution

17. Hardy - Weinberg Principle mathematically explains the occurrence and consistency of gene frequency for a particular gene. The principle states that the allelic frequency

remains constant through generations and the gene pool remains constant. This phenomenon is called genetic equilibrium. Various factors contribute to the change in gene frequency of a species in an area. If a few individuals from a species migrate to another place, the gene frequency changes again. It decreases from the place from where the individuals migrate and increase in the place they migrate to. If the frequency of the genes is high enough in the newly migrated land to start a new species, the migrated individuals become the founder species, and the effect is

called the founder effect. Thus, it contributes to the process of evolution.

The notation p and q of the Hardy Weinberg equation represent of a diploid organism.

- A. frequency of allele p
- B. frequency of only allele A
- C. frequency of the only allele a
- D. frequency of allele A and a

Answer: D



18. Hardy - Weinberg Principle mathematically explains the occurrence and consistency of gene frequency for a particular gene. The principle states that the allelic frequency remains constant through generations and the gene pool remains constant. This phenomenon is called genetic equilibrium. Various factors contribute to the change in gene frequency of a species in an area. If a few individuals from a species migrate to another

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..... was the island where Darwin visited and discovered adaptive radiation?

A. Archipelago

B. Galapagos

C. Port Blair

D. Lakshadweep

Answer: D



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19. Hardy - Weinberg Principle mathematically explains the occurrence and consistency of gene frequency for a particular gene. The principle states that the allelic frequency

remains constant through generations and the gene pool remains constant. This phenomenon is called genetic equilibrium. Various factors contribute to the change in gene frequency of a species in an area. If a few individuals from a species migrate to another place, the gene frequency changes again. It decreases from the place from where the individuals migrate and increase in the place they migrate to. If the frequency of the genes is high enough in the newly migrated land to start a new species, the migrated individuals become the founder species, and the effect is

called the founder effect. Thus, it contributes to the process of evolution.

Which of the following does not belong to the Hardy Weinberg principle?

A. Frequency remained fixed through generations

B. Used algebraic equations

C. Allele frequency varies from species

D. Gene pool remains a constant

Answer: C





20. Hardy - Weinberg Principle mathematically explains the occurrence and consistency of gene frequency for a particular gene. The principle states that the allelic frequency remains constant through generations and the gene pool remains constant. This phenomenon is called genetic equilibrium. Various factors contribute to the change in gene frequency of a species in an area. If a few individuals from a species migrate to another

place, the gene frequency changes again. It decreases from the place from where the individuals migrate and increase in the place they migrate to. If the frequency of the genes is high enough in the newly migrated land to start a new species, the migrated individuals become the founder species, and the effect is called the founder effect. Thus, it contributes to the process of evolution.

It is known that the total sum of all the frequencies of the allele is

A. one

B. two

C. three

D. four

Answer: A



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