BIOLOGY

BOOKS - ARIHANT PUBLICATION

EVOLUTION

Part I Questions For Practice Very Short Answer Type Questions

1. TheBig-Bang theory applies to the initial formation of

the expanding universe

our solar system

earth and the plants

the first protobionts

A. the expanding universe

B. our solar system

C. earth and the plants

D. the first protobionts

Answer:

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2. Which one of the following gases probablyleast abundantin the early atmosphere?

A. H_2

B. O_2

C. NH_3

D. CO

Answer:

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3. The lower invertebrates emerged during the

A. Palaeozoic

B. Cenozoic

C. Mesozoic

D. Proterozoic

Answer:

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4. Palaeontological evidences for evolution refer to the

A. fossils

B. analogous organs

C. homologous organs

D. development of embryo

Answer:

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5. Which of the following is a connecting link between annelids and arthropods?

A. Peripatus

B. Euglena

C. Viruses

D. None of these

Answer:

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6. Oxygen releasing prokaryotes first appeared at least 5 bilion years ago.

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7. Oparin and Miller independently proposed the origin of life by abiogenic molecular evolution.

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8. Cretaceous period belongs to Palaeozoic era.

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9. George Cuvier is known as the Father of Palaeontology'.

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10. The apparatus used by ..... was called spark discharge apparatus.

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11. Direct evidences of organic evolution are provided by ....

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12. The classical example of ..... is the limb skeleton of vertebrates.

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13. Bacteria-like organisms which evolved about 3.5 billion years ago and possessed chlorophyll pigment

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14. What are the organs of similar function but of different pattern of origin and development called?

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15. The connecting link between reptiles and mammals.

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Part I Questions For Practice Short Answer Type Questions

1. When was earth formed? What was its conditions at that time?

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2. What does the Big-Bang theory explain to us?

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3. State the theory of abiogenesis. How does Miller's experiment support this theory?

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4. Define theory of biogenesis. Who were the scientists to support this theory experimentally?

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

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6. What was the contribution of Oparin of Russia and Haldane of England regarding evolution?

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7. Palaeontological evidences support the theory of organic evolution. Explain with an example.

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8. What is geological time scale?.Discuss geological time scale as evidence of evolution.

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9. What are homologous organs? Give an example.

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10. What are analogous organs ? Give two examples.

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11. Explain the theory of recapitulation.

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12. Explain biogenetic law.

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13. Discuss molecular homology as an evidence of organic evolution.

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Part I Questions For Practice Long Answer Type Question

1. How does the study of comparative anatomy of living organism explain the process of evolution?

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Part I Questions For Assessment Very Short Answer Type Questions

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

A. methane

B. CO_2

C. hydrogen

D. water vapour

Answer:

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2. Closely related species differing in various traits express

A. convergent evolution

B. divergent evolution

C. parallel evolution

D. None of the above

Answer:

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3. Amphibians were dominant during Jurassic period

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4. Haeckel's biogenetic law is reproductive isolation.

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5. The theory of pangenesis was rejected due to the acceptance of ..... .

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6. Connecting link between plants and animais is ..... .

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7. Rocks in which fossils are generally found.

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8. Method used to determine the age of fossils upto one million years old.

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Part I Questions For Assessment Short Answer Type Questions

1. All vertebrate embryos show some similarities at an early stage. Mention two

such similarities. What do they indicate? Explain.

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2. Who proposed the theory of spontaneous generation?

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3. The study of

(i) Fossils of dinosaurs

(ii) Forelimbs of cheetah, bat and human

(iii) Thorns of Bougainvillea and tendril of Cucurbita.

Show that evolution of ife forms has indeed taken place on earth. Explain.

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4. Mention any three evidences obtained from biochemical and molecular studies.

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Part I Questions For Assessment Long Answer Type Questions

1. Comment on the similarily between the wing of a butterfly and wing of a bat. What conclusions can you from the above with reference to evolution.

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2. The wing of a bird and forelimb of a horse are homologous or analogous organs. Also,

give the type of evolution that explains the development of such organs.

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Part Ii Questions For Practice Very Short Answer Type Questions

1. Industrial melanism was highlighted by

A. Mimosa pudica

B. Rock python

C. Triticum aestivum

D. Biston betularia

Answer:

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2. The appearance of pesticide resistance in mosquitoes is an example of

A. adaptive radiation

B. recapitulation theory

C. pre-existing variation in the population

D. transduction

Answer:

Watch Video Solution

3. The most apparent change during the evolutionary history of Homo sapiens is traced in

A. loss of body hair

B. walking upright

C. shortening of jaws

D. remarkable increase in brain size

Answer:

4. The Primate which existed 15 mya among these was

A. Homo habilis

B. Ramapithecus

C. Homo erectus

D. Australopithecus

Answer:

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5. The tool making ancestor of humans was

A. Homo erectus

B. Homo habilis

C. Ramapithecus

D. Australopithecus

Answer:

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6. The phenomenon of development of a new species from pre-existing one is called mutation.

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7. The most accepted theory of evolution known as Modern synthetic theory of evolution, is designated by Miler.

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8. Both ..... And ..... jointly propounded the Theory of Natural Selection'.

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9. Random processes such as ..... and ..... can also affect evolution.

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10. Two populations are said to be isolated if there is no longer any ..... between them.

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11. The diversification of the organisms of a population into a number of new groups is called.

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12. The basis of origin of variations in organisms as described by Hugo de Vries was

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13. It prevents inbreeding of natural populations present in the same geographical locality.

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Part Ii Questions For Practice Short Answer Type Questions

1. Name the main critic of Lamarck. Mention the name of his theory.

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2. Describe the mechanism of evolution as explained by Hugo de Vries.

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3. With the help of any two suitable examples explain the effect of anthropogenic actions on organic evolution.

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4. What is reproductive isolation? Give its significance.

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5. How does the process of natural selection affect Hardy-Weinberg equillibrium?

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6. What does the following equation represent? Explain. $P^2 + 2pq + q^2 = 1$

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7. Write a short note on Cro-Magnon man.

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8. Explain Darwinian theory of evolution with the help of one suitable example. State the

two key concepts of the theory.

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9. Why was Darwin's theory of evolution criticised? Explain.

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Part Ii Questions For Assessment Very Short Answer Type Questions

1. According to Charles Darwin, evolution is

A. a slow and discontinuous process

B. a sudden but discontinuous process

C. a slow, gradual and continuous process

D. a slow, sudden and discontinuous process

Answer:

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2. When gene migration happens multiple times it is called $\underline{\text{mutation}}$.

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3. Hardy-Weinberg equation is ..... .

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4. The scientist who proposed theory of pangenesis.

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Part Ii Questions For Assessment Short Answer Type Questions

1. Evolution is not a direct process, but a stochastic process, based on chance events in nature. Justify.

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2. When we say 'survival of the fittest', does it mean that

(i) those which are fit only survive?

(ii) those that survive are called fit?

Comment.

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3. Disruptive selection is rarest form of selection: Give reason.

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4. Why Hardy-Weinberg equilibrium is not applicable for small population size?

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5. Write the cranial cavity volume of hominoids mentioned below.

Java man

Watch Video Solution

6. Write the cranial cavity volume of hominoids mentioned below.

The first ape-man

 Watch Video Solution

7. Write the cranial cavity volume of hominoids mentioned below.

Homo habilis

 Watch Video Solution

8. Write the cranial cavity volume of hominoids mentioned below.

Primitive man

Watch Video Solution

9. Write the cranial cavity volume of hominoids mentioned below.

Modern man

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Part Ii Questions For Assessment Long Answer Type Questions

1. Show that Darwin's natural selection is based on theoretical factual observations, with an example for each.

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Part Ii Questions For Assessment Differentiate Between The Following

1. Darwin's concept and de Vries concept.

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2. Lamarckism and Darwinism.

 Watch Video Solution

3. Geographical isolation and Reproductive isolation.

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Odisha Bureau S Textbook Solutions Very Short Answer Type Questions

1. How many years ago life originated on earth?

A. 2.5 billion years ago

B. 3.5 billion years ago

C. 4.5 billion years ago

D. 5.5 billion years ago

Answer:

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2. Which theory proposes the formation of living beings from non-living things?

A. Theory of panspermia

B. Theory of abiogenesis

C. Theory of biogenesis

D. Theory of special creation

Answer:

Watch Video Solution

3. Who proposed the chemical evolution of life?

A. AI Oparin - JBS Haidane

B. Louis Pasteur - AI Oparin

C. Francesco Redi - JBS Haldane

D. Spallanzani - Louis Pasteur

Answer:

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4. Which of the following compounds Miller-Urey used in the experimental synthesis of amino acids?

A. CH_4, NH_3, CO_2 and H_2O

B. CH_4, NH_3, H_2 and H_2O

C. CH_4, CO_2, H_2 and H_2O

D. CH_{2,N_2,H_2} and H_2O

Answer:

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5. Hot ocean water containing concentrated of prebiotic organic compounds was known as

A. colloid

B. crystalloid

C. gelatinous mixture

D. primordial soup

Answer:

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6. Which of the following was formed first?

A. Virus

B. Prokaryote

C. Coacervates

D. Eukaryote

Answer:

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7. A paper on 'natural selection' and 'origin of species'was presented in the Linnaean Society of London in 1858 by

A. Charles Darwin - Robert Malthus

B. Charles Darwin - Alfred R Wallace

C. Hugo de Vries - Roberr Malthus

D. Alfred R Wallace - August Weismann

Answer:

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8. Analogous organs have

A. different origin and similar function

B. similar origin and similar function

C. similar origin and different function

D. different origin and different function

Answer:

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9. Find out the odd one.

A. Aerial-Flying

B. Fussorial-Burrowingg

C. Cursorial-Running

D. Arboreal-Swimming

Answer:

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10. Which one of the following sets of organs constitutes vestigial organs?

A. Appendix, coccyx and plica semilunaris

B. Appendix, pectoral girdle and caecum

C. Large intestine, coccyx and ear muscle

D. Appendix, coccyx and rectum

Answer:

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11. What is the correct ascending order?

A. Mesozoic, Cenozoic and Palaeozoic

B. Cenozoic, Mesozoic and Palaeozoic

C. Palaeozoic, Mesozoic and Cenozoic

D. Palaeozoic, Cenozoic and Mesozoic

Answer:

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12. Who is known as the Father of Modern Palaeontology'?

A. Leonardo da Vinci

B. Karl Ernst von Baer

C. Ernst Haeckel

D. Georges Cuvier

Answer:

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13. Find the incorrect match

A. Blood group 'A'-Antigen A

B. Blood group 'AB'-No antibody

C. Blood group 'O'-Antigen A and B

D. Blood group 'B'-Antibody anti-A

Answer:

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14. Which is not a case of chromosomal aberration?

A. Recombination

B. Duplication

C. Inversion

D. Translocation

Answer:

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15. Which type of natural selection removes individuals from both ends of a phenotypic distribution?

A. Directional

B. Disruptive

C. Stabilising

D. None of these

Answer:

16. Which is not a great ape?

A. Gorilla

B. Chimpanzee

C. Orangutan

D. Macaque

Answer:

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17. What is the correct sequence of human evolution?

A. Homo habilis, H. erectus, H. neanderthalensis, H. sapiens

B. Homo erectus, H. habilis, H. neanderthalensis, H. sapiens

C. Homo habilis, H. neanderthalensis, H sapiens, H. erectus

D. Homo erectus, H. neanderthalensis, H habilis, H. sapiens

Answer:

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18. Organic evolution refers to a change in diversity and ..... in populations of organisms.

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19. The concept of chemical evolution was proposed by JBS Haldane and a Russian scientist, ...

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20. Charles Robert Darwin hailed from..... .

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21. Charles Robert Darwin went on a voyage on board the ship ..... .

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22. Jean Baptiste de Lamarck wrote a book, entitled ..... which embodied his theory of inheritance of acquired characters.

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23. Charles Darwin was inspired by the population theory proposed by ..... .

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24. Darwin's contemporary ..... was studying population diversity in the erstwhile East Indies.

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25. Mutation theory was proposed by:

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26. Which Greek philosopher said 'Life has originated and evolved from sea water' and regarded as father of evolutionary ideas?

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27. A gene mutation involving only one nucleotide is called as ..... .

Watch Video Solution

28. Abiogenesis of simple organic molecules was experimentally proved by ..... And .....

View Text Solution

29. The 'theory of inheritance of acquired characters was proposed by ..... who hailed from ..... .

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30. August Weismann's ..... theory gave a thunder blow to Lamarckism.

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31. Charles Darwin studied the diversity of a class of birds, commonly known as ..... in the Galapagos archipelago.

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32. The original title of Darwin's book was ..... .

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33. Natural selection in action was demonstrated by ..... Moth.

34. The earliest form of horse was ..... that was livingg in the plains of North America.

35. The fossil of ..... discovered from the sedimentary rocks of Bavaria, Germany is the missing link between reptiles and birds.

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36. Digits II and IV persist in modern horse as reduced structures, known as ..... bones.

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37. Modifications of the basic pentadactyl limb plan in vertebrates to meet their needs is known as .....

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38. The arrangement of different eras, periods and epochs in their ascending order of time constitutes the .....

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39. Peripatus is connecting link between ..... and .....

Watch Video Solution

40. ..... era is known as the era of reptiles.

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41. Sudden reappearance of some ancestral characters in the present organisms is called

as .....

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42. The effect of ..... is larger in small populations and smaller in large populations.

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43. The theory that explains that life originated on this planet from non-living chemical constituents.

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44. The ocean water that contained concentrated amount of prebiotic organic compounds.

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45. The droplets formed by the separation of high molecular weight organic compounds in a colloidal solution.

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46. Protenoids, when dissolved in water by boiling and then cooling, organised structures are formed.

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47. Buffon, Erasmus Darwin and Lamarck proposed theories on organic evolution, which had one thing in common.

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48. Name the naturalist, who proposed that ontogeny recapitulates phylogeny.

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49. Name the theory, which explains about the origin of amphibians from aquatic fish-like ancestors.

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50. DNA $\rightarrow$ RNA $\rightarrow$ Protein concept.

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51. Genetic recombination occurs in cell division. Name the cell division.

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52. Hugo de vries proposed mutation theory of evolution working on _____.

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53. Breakage, exchange and rejoining of homologous chromosomal segments.

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54. A single nucleotide substitution in the nucleotide sequence of a gene.

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55. The collection of all genes of a population of species.

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56. A sudden change in the genetic make up that ends up in a new expression.

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57. The primitive atmosphere was reducing.

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58. Heterotrophic organisms with aerobic respiration evolved prior to anaerobic organisms.

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59. What is genetic drift?

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60. Serum proteins of closely related animals are similar in their amino acid sequences to a greater extent.

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61. Reptiles flourished in the Palaeozoic era.

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62. Close similarity in the nucleotide sequence between two organisms depicts close

relationship between them.

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63. Numerical changes, involving one or both chromosomes of a homologous pair, are known as aneuploidy.

true

false

A. true

B. false

C.

D.

Answer:

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64. Genetic drift is the main driving force of evolution in a large randomly breeding population.

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65. Discontinuous variation is the product of mutation.

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Odisha Bureau S Textbook Solutions Short Answer Type Questions

1. Who proposed the theory of spontaneous generation?

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2. What do you mean by chemical evolution?

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3. Explain Miller and urey experiment.

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4. The ocean water that contained concentrated amount of prebiotic organic compounds.

Watch Video Solution

5. What is prodigality of reproduction ? Give an example.

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6. Write three criticisms on Darwinism.

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7. What are the homologus organs or divergent evolution?

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8. Describe homology in early embryonic development.

Watch Video Solution

9. Explain the theory of recapitulation.

Watch Video Solution

10. Palaeontological evidences support the theory of organic evolution. Explain with an example.

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11. Archaeopteryx is connecting link between

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12. What do you mean by a geological time scale?

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13. Explain serological test.

Watch Video Solution

14. Explain industrial mechanism.

Watch Video Solution

15. What is genetic drift?

Watch Video Solution

16. What is speciation?

Watch Video Solution

17. What is bottleneck effect ?

Watch Video Solution

18. What is Hardy -Weinberg principle?

Watch Video Solution

19. Write short note on: Adaptive radiation

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Differentiate Between The Following

1. Abiogenesis and Biogenesis.

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2. Chemoautotrophs and Photoautotrophs

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3. Chemical evolution and Biological evolution.

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4. Different the following (Restrict each answer three to four important sentences): Homologous organ and Analogous organ

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5. Moulds and Casts.

Watch Video Solution

6. Genetic recombination and Mutation.

Watch Video Solution

7. Somatic variation and Germinal variation.

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8. Chromosomal aberration and Gene mutation.

View Text Solution

9. Euploidy and Aneuploidy.

Watch Video Solution

10. Natural selection and Genetic drift.

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11. Convergent evolution and Divergent evolution

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Odisha Bureau S Textbook Solutions Long Answer Type Questions

1. Give an account of the chemical basis of origin of life.

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2. Discuss the evidences of organic evolution from comparative anatomy and morphology.

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3. Discuss embryological evidences of evolution.

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4. Answer the following :

Write short notes on the following :

Palaeontological evidences of evolution

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5. Discuss theory of natural selection proposed by darwin.

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6. Discuss about the synthetic theory of organic evolution.

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Chapter Practice Very Short Answer Type Questions

1. Which compound has very improtant role in prebiotic evolution?

A. SO_2

B. CH_4

C. NO

D. SO_3

Answer:

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2. Appearance of teeth in the embryo of a bird proves that the

A. ontogeny repeats phylogeny

B. evolution has taken place

C. birds have evolved from reptiles

D. All of the above

Answer:

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3. According to Lamarck, acquired characters are

A. inherited

B. artificial

C. superficial

D. All of these

Answer:

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4. In Hardy-Weinberg equation, the percentage of heterozygous individual is

A. p^2

B. p+q

C. q

D. 2pq

Answer:

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5. Serological tests are done using.....

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6. Darwin proposed the theory of .....

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7. Genetic drift is a ..... process.

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8. During random mating, gene ratio remains constant in species.

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9. Ancestor of man,who first stood erect, was Java ape man.

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10. The theory proposed by Darwin to explain the inheritance of characteristics from parents to their offspring

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11. The process of formation of fossils.

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12. Name the ship in which Darwin had a voyage around the world?

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13. What are the periods in Palaeozoic era and name the plant group that appeared in them?

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14. Morphological and Physiological evidences of evolution.

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15. Hugo de vries proposed mutation theory of evolution working on _____.

 Watch Video Solution

16. Have you heard of modern synthetic theory of evolution?

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Chapter Practice Short Answer Type Questions

1. Differentiate between the following

Theory of special creation and theory of panspermia.

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2. Differentiate between the following

Bottleneck effect and founder effect.

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Chapter Practice Long Answer Type Questions

1. The study of

(i) Fossils of dinosaurs

(ii) Forelimbs of cheetah, bat and human

(iii) Thorns of Bougainvillea and tendril of

Cucurbita.

Show that evolution of ife forms has indeed taken place on earth. Explain.

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2. Describe homology in early embryonic development.

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3. Enlist the key postulates involved in the Darwin's theory of evolution. Do you think awareness about Mendel's work would have helped Darwin in explaining the origin of variation.

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