



BIOLOGY

BOOKS - PRADEEP BIOLOGY (HINGLISH)

EVOLUTION

Curiosity Questions

1. What was the relationship between Miller and Urey ?

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2. Did the early organic molecules form a hot broth or a sludge ?

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3. How is it that both abiogenesis and biogenesis are true ?

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4. What was the food of the first living organisms ?

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5. How do the growth forms named intussusception and accretion differ ?

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6. What do the connecting links indicate in evolution ?

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7. Why do the animals have certain useless organs in their body ?



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8. How did the Ancon sheep come into existence ?



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9. Why is the modern concept of evolution considered a synthesis of Darwin-Wallace's and De Vries' theories ?



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10. Why does the concept of natural selection really mean ?



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11. Why has the addition of antibiotics to cattle feed been banned ?



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12. What is the actual basis of adaptation in organisms ?

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13. Why is the fossil record of human evolution incomplete ?

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14. From where have the earliest fossils of the prehistoric man found ?

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15. Who is considered the direct ancestor of the living man ?

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

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

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

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4. Try to trace the various components of human evolution

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5. Find out through internet and popular science articles whether animals other than man have self-consciousness.

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6. List 10 modern-day animals and using the internet resources link it to a corresponding ancient fossil. Name both.

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7. Describe one example of adaptive radiation.

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8. Can we call human evolution as an adaptive radiation? Explain.

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9. Using various resources such as your school library or the internet and discussions with your teacher, trace the evolutionary stages of any one animal say horse.

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Additional Questions Very Short Answer Questions

1. Name the scientists who disproved the theory of spontaneous generation of life ?

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2. What are meteorites ?

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3. Give the age of the earliest prokaryote

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4. Where did life appear first ?

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5. Is life still originating ?

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6. Is the scheme of origin of life given by Oparin and Haldane final ?

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7. Name the scientist who experimentally confirmed the Oparin- Haldane theory of the origin of life

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8. What is a coacervate ?

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9. Name the stage that followed coacervates in the origin of life

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10. Were the first-formed organisms autotrophic or heterotrophic ?

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11. In what form/forms had Urey and Miller supplied energy in their experiment ?

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12. Was oxygen present in free stable in primitive earth's atmosphere ?

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13. Who was the first scientist to object 'theory of abiogenesis' ?

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14. What is the probable period of origin of cyanobacteria ?

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15. Name the possible sources to energy in most accept theory of origin of life

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16. What does theory of special creation state?

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17. What was sealed in the spark chamber in famous Miller and Urey simulation experiment ?

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18. Who obtained protenoid microspheres by heating a mixture of dry amino acids to $130 - 80^{\circ}C$ and later cooling them in water ?

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19. What do you mean by Panspermia ?



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20. Give a 3-work definition of "organic evolution"



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21. Cite one example of homologous organs in plants



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22. Give two example of connecting links



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23. Name two vestigial organs of human body



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24. Define recapitulation theory in 3 words.



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25. Mention one temporary embryonic structure of no use



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26. Name three main kinds of rocks



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27. Which organs of man are homologous to the wings of birds ?



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28. Cite one example of dinosaurs



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29. In which era the fossils are scanty



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30. What is Archaeopteryx ? What is its significance in evolution ?



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31. Who proposed the biogenetic theory "ontogeny repeats phylogeny"?



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32. Cite two examples of anaogous organs and two of atavistic structures

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33. Which period is called the 'age of reptiles '?

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34. Mention the immediate ancestors of birds and mammals

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35. Name three recent eras of geological time

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36. Name the era in the geological time scale when life had not yet originated on earth.

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37. Mention any species which came into existence in the recent past

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38. In which era of geological time scale mammals dominated the scene ?

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39. Name a living fossil.

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40. Given an example of missing link



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41. name the following - (i)A living fossil (ii)A missing link (iii)A connecting link



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42. Name the theory of evolution given by Lamarck



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



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

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

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

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47. In what respect did Darwin agree with Lamarck ?

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48. Cite one example of natural mutation producing a new species

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49. What are sympatric species

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50. How do genes mutate ?

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51. List 3 mechanisms by which variant genotypes can be produced in nature

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52. 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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53. What is significance of the Lederberg's experiment?

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

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55. Name the ancestors of primates

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56. Should man be regarded a "special creation" or "just another animal" ?

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

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58. Name the common ancestor of great apes and man

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59. "Man descended from monkeys".Do you agree ?

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60. Which is the earliest fossil of prehistoric man ?



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61. Name the apes which are most primitive



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62. What is the cranial capacity of man ?



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63. Where have the fossils of Sivapithecus found ?



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64. Name the extinct representative of modern man



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65. Which place in India is famous for human fossils ?

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66. Which is opposable in man, pollex or hallux ?

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67. Name the primate family in which the humans have been placed

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68. What is the diploid number of chromosomes in the great apes and in the humans ?

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69. Who is a palaeoanthropologist ?



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



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



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72. Mention the type of evolution that has brought the similarity as seen in potato tuber and sweet potato



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

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74. Are the thorns of Bougainvillea and tendril of Cucurbita homologous or analogous? What type of evolution has brought such a similarity in them?

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75. Name the scientist who disproved spontaneous generation theory

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

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77. Which of the following walked like gorillas and chimpanzees ?

- A. Dryopithecus
- B. Ramapithecus
- C. Both (a) and (b)
- D. Australopithecus

Answer: a



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78. The turtle and tortoise evolved from

- A. Amphibians
- B. Fishes
- C. Mammals
- D. None of these

Answer: d



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79. Write about the theory of spontaneous generation



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80. Which of the following evolved first ?

A. Homo sapiens

B. Homo habilis

C. Homo erectus

D. Tyrannosaurus

Answer: d



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81. Which of the following walked upright ?

A. Dryopithecus

B. Ramapithecus

C. Both (a) and (b)

D. Australopithecus

Answer:



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82. Name the naturalist who had also come to similar conclusion around the same time what Darwin worked out ?



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83. Fill in the Blanks.

Atmosphere of the primitive earth was highly While that of present

earth is highly ...

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84. WHAT IS ADAPTIVE RADIATION?

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85. True/False Type Question: Ontogeny repeats phylogeny

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86. Identify the examples of convergent evolution from the following :

- (i) Flippers of penguins and dolphins
- (ii) Eyes of octopus and mammals
- (iii) Vertebrate brains

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87. Identify the examples of homologous structures from the following-

(i) Vertebrate hearts

(ii) Thorns in Bougainvillea and tendrils of Cucurbita.

(iii) Food storage-organs in sweet potato and potato.

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88. "Sweet potato tubers and potato tubers are the result of convergent evolution." Justify the statement.

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89. State a reason for the increased population of dark coloured moths coinciding with the loss of lichens (on tree barks) during industrialization period in England.

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90. Write the probable differences in eating habits of *Homo habilis* and *Homo erectus*.



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91. What is "fitness of an individual" according to Darwin?



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92. Rearrange the human activities mentioned below as per the order in which they developed after the modern *Homo sapiens* came into existence during ice age :

(i) Human settlement (ii) Prehistoric cave art (iii) Agriculture



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93. State two postulates of Oparin and Haldane with reference to origin of life



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94. Write the names of the following :

(i) A 15 mya primate that was ape-like

(ii) A 2mya primate that lived in East African grasslands.



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Additional Questions Short Answer Questions

1. When did earth and life appear ? Give their sources .



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2. Mention essential conditions for origin of life



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3. How did the original reducing atmosphere of primitive earth change ?

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4. In what ways the coacervates were inferior to eobionts ?

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5. What is progenote?

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6. Who was J.B.S. Haldane ?

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7. Define biogenesis.

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8. Miller performed an experiment by recreating in the laboratory the probable conditions of the atmosphere of primitive earth.

(i) What was the purpose of the experiment ?

(ii) In what forms was energy supplied for chemical reactions to occur ?

(iii) For how long the experiment was run continuously ?

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9. What were the sources of energy during chemical evolution on primitive earth ?

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10. Name the scientists who disproved the theory of spontaneous generation ?

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11. Life originated from the earth's inorganic atmosphere in the past but this no longer happens today. Give two reasons .

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12. What was S.W. Fox's contribution to the chemical theory of the origin of life ?

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13. Why are scientists searching for the existence of life on other planets ?

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14. How do the movements of living and nonliving objects differ ?



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15. what is homoeostasis ?



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16. Adaptation and mutation are interlinked. Which occurs first ?



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17. What are Darwin's finches ?



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18. Why does the tadpole of frog resemble a fish ?



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19. Give an example of a fossil that shows an unaltered animal

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

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21. What are metamorphic rocks? Give one example

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22. What was Pangaea? When did it exist?

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23. Archaeopteryx is considered as a connecting link between reptiles and birds. Justify the statements by giving two characteristics of each group.

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24. What is molecular homology ? Cite one example

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25. What are the two striking observations when different stages of embryos of different classes of vertebrates are studied comparatively ?
How does this study support evolution ?

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26. What is individual's role in the evolutionary process ?

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27. What is the source of variation in monoparental (asexual) reproduction ?

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28. Genetic Drift

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29. Explain the statement "natural selection really means differential reproduction "

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30. What is a deme ?

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31. What is antibiotic resistance ?

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32. How does reproductive isolation arise ?

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33. Differentiate between aneuploidy and polyploidy

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34. Which variations from raw materials of organic evolution ?

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35. How do natural selection and artificial selection differ.

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36. Explain why D.D.T. has now become ineffective against mosquitoes

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37. What do the terms prosimians and simians mean ?

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38. What is brachiation ?

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39. Who gave man the scientific name *Homo sapiens* ? What does it mean ? Which animals are regarded man's nearest relatives ?

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40. Give the position of man in mammals

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41. When and from which source the mammals and the primates originated ?

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42. Write down 4 important resemblances between apes and humans .

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43. Name the fossil modern man and living modern man. How do they differ in cranial capacity

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44. Name the main stages in human evolution in order of their appearance

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45. What advantages man got over other primates by having erect posture and large brain

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46. Name the curvatures in the human spine . Give their advantage.

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47. What is divergent evolution? Explain taking an example of plants.

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48. How do Darwin's finches illustrate adaptive radiation?

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49. Diagram of Earth is given. Answer the question:

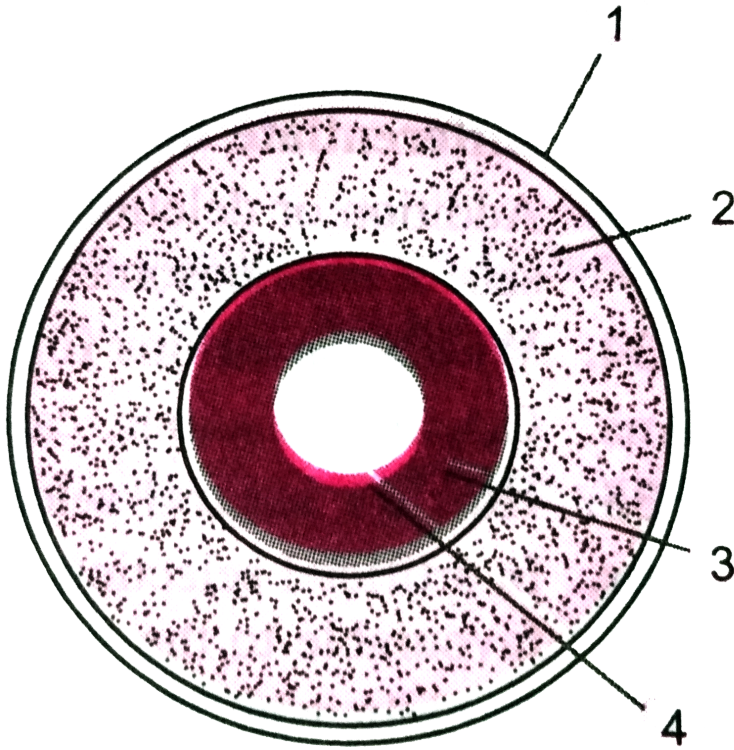
(a) Label the regions marked as 1, 2, 3 and 4

(b) Give thickness of the above four regions.

(c) Name important elements present in these regions.

(d) Give alternative name of central (core) part of the earth and that of mantle.

(e) Name the galaxy to which our solar system belongs .



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50. How do we compute the age of a fossil or a rock ?

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51. What is founder effect ?

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52. Give a brief account of Lamarck's theory of evolution

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53. What is the advantage of natural selection ?

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54. What is convergent evolution ? Describe giving an example

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55. Differentiate between Homologous organs and analogous organs



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56. Write the name of any four factors which affect Hardy-weinberg equilibrium



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57. List the two main propositions of Oparin and Haldane



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58. Mention the contribution of S.L. Miller's experiments on Origin of Life



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



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60. Identify the following pairs of Homologous or Analogous organs:

- i) Sweet potato and potato
- ii) Eye of octopus and eye of mammals
- iii) Thorns of Bougainvillea and tendrils of Cucurbits.
- iv) Fore limbs of Bat and Whale.



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61. (a) Select the homologous structures from the combinations given below:

- (i) Forelimbs of whales and bats
 - (ii) Tuber of potato and sweet potato
 - (iii) Eyes of octopus and mammals
 - (iv) Thorns of Bougainvillea and tendrils of Cucurbita
- (b) State the kind of evolution they represent.



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62. Mention the evolutionary significance of the following organisms :

(i)Shrews (ii)Lobefins (iii)Homo habilis (iv)Homo erectus

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63. With the help of an algebraic equation, how did Hardy-Weinberg explain that in a given population the frequency of occurrence of alleles of a gene is supposed to remain the same through generations ?

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64. List the conditions found on the primitive earth

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65. If abiotic origin of life is in progress on a planet other than earth, what should be the conditions there ? Explains



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66. Mention the main postulates of the theory of special creation



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67. What is exobiology ? Do you think life is present on other planets ?



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68. What are coacervates ? How were they formed ? What is their importance in origin of life ?



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69. Why are scientists searching for the existence of life on other planets ?



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70. Make a list of the theories put forward for the origin of life

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71. What role the sun played in the origin of life ?

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72. How was the protective ozone layer produced ?

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73. Who created coacervates artificially in the laboratory for the first time ? Enumerate their characteristics. What do they confirm about the origin of life ?

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74. In what way the reducing atmosphere helped in the origin of life ?

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75. Life originated in the sea water. Support this statement

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76. Who suggested the formation of coacervates ? List the biological properties of coacervates

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77. Summarize Miller simulation experiment for organic synthesis. Comment on its efficacy

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78. State the hypothesis of Oparin and Haldane about the primeval earth condition .What do you understand by Haldane's hot,dilute soup?State its significance.



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79. Name the two major events of this history of life ? Briefly state the major theories of origin of life ? Which one of them has scientific basis ?



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80. What is cosmology ? Name major theories of origin of universe. Briefly narrate the most accepted one.



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81. What is protobiont ? Name the various types of protobionts conceived by different scientists. Mention their characteristics and drawbacks .

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82. What is palaeontology ?

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83. Make a list of the biogeographical regions.

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84. How are the fossils formed

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85. What are homologous organs ? Cite one example

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86. Define analogous organs. Give one example

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87. What is atavism ?

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88. What are connecting links ? Cite two examples

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89. How do the homologous and analogous organs differ. Cite one example of each

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90. Explain the meaning of 'ontogeny repeats phylogeny'

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91. What is meant by the word Pangaea ? Give its ultimate fate

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92. Name the media in which fossils can be formed

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93. Mention the type of movements and growth shown by the living organisms

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94. List the main types of fossils

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95. Which is the most reliable evidence for evolution and why ?

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96. What is biogeography ? How do Darwin's finches provide the biogeographical evidence in favour of evolution ?

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97. Enlist some of the vestigial organs found in the human body

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98. What does "molecular homology" mean ?

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99. What are vestigial organs ?

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100. What do you mean by missing links ?

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101. Differentiate between atavism and vestigial organs



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102. List the main factors on which Lamarck based his theory of biological evolution



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103. What are the main postulates of Darwin's theory of natural selection ?



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104. How do new species arise according to De Vries mutation theory of organic evolution ?



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105. List the various types of isolation

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106. In Lederberg experiment , what was observed when replicas of the master plate were made with plates containing penicillin. Give reasons and mention the concept illustrated

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107. Mention the factors on which Neo-Darwinism is based

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108. How were the exact replicas of the master plate obtained in Lederberg's replica-plating experiment ?

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109. What is meant by industrial melanism ?

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110. What is artificial selection with reference to evolution ? Name two plant that have been produced by artificial selection

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111. What is genetic drift ? Give its significance in evolution

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112. How was Darwin's theory of natural selection proved by Lederberg ?

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113. Describe Pavlov's experiment. Mention its significance too



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114. What are the drawbacks in the Darwin's theory of "Origin of species " ?



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115. Write notes on-(i)Replica plating (ii)Gene flow (iii)Industrial melanism (iv)Allopatric and sympatric speciation (v)Balancing selection (vi)Biological species concept (vii)Evolutionary species concept (viii)Hybrid sterility



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116. What is variation ? Name the basic processes that cause variation among organisms. Discuss role of migration in evolution



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117. Define genetic drift. How does it produce founder effect and genetic bottleneck ?



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118. How do the apes and humans differ with regard to vertebral column, pelvic girdle and feet ?



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119. Give an outline classification of Primates , giving one example of each



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120. Write briefly about cromagnon man



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121. The homology in haemoglobin of man and gorilla is 99 percent. What explanation would you give for this finding ?



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122. You have been sent stained chromosomal preparations of normal young women from Nicobar Islands, New Zealand , Alaska , Tanzania, Mongolia, Bangladesh, France, USA and Norway. The slides are unlabelled. By a microscopic examination would you be able to relate a given slide to a specific country ? Explain



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123. What are the various problems in tracing human evolution ?



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124. Describe bipedal mode of locomotion



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125. Give the advantage of stereoscopic vision



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126. What is chromosome banding ? Give its utility in tracing human ancestry



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127. Write a short note on Homo erectus



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128. How does Darwin's theory of Natural Selection explain the appearance of new forms of life on earth ?



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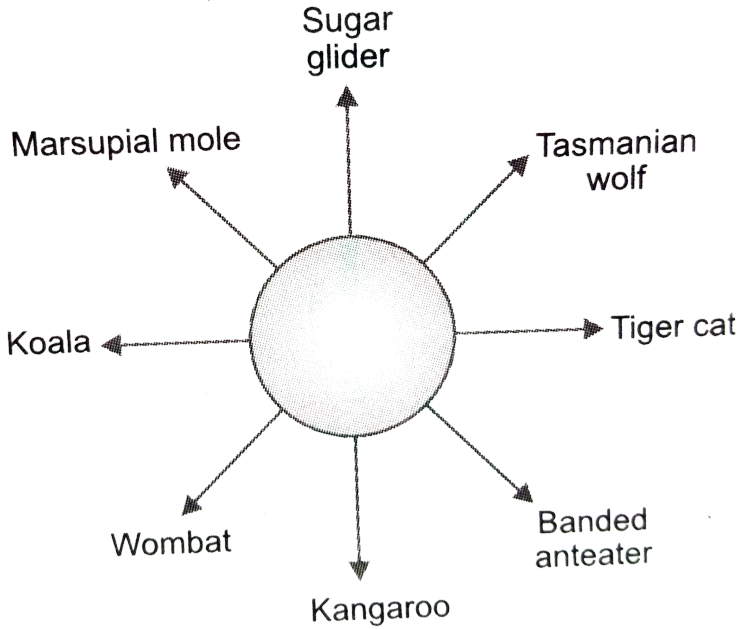
129. Study the figures below and answer the following :

(a) Mention the specific geographical region where these organisms are found.

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

(c) Explain giving reasons the existence of placental wolf and Tasmanian

wolf sharing the same habitat.



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130. Study the figure and answer the following



(a) Write your observations on the variations seen in the Darwin's finches shown above .

(b) How did Darwin explain the existence of different varieties of finches on Galapagos Islands ?

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131. Explain convergent and divergent evolution with the help of one example of each.

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

(b) List any two factors that can disturb the genetic equilibrium.

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133. Atmosphere of the primitive earth was highly ____ while that of the present earth is highly _____.



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134. Free ___ gas was ___ in the primitive earth's atmosphere.



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135. The first organisms were presumably ___ and ___ some of which might have evolved into anaerobic autotrophs .



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136. About 4.6 billion years ago, the Earth consisted of a solid ___ and a gaseous ___



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137. In the primaeval Earth, the organic molecules accumulated in ___ because their ___ was extremely slow in the absence of any life or enzymatic catalysis.



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138. Match the items in column I with appropriate items (one or more) of column II.

Column I

- (i) Connecting link between annelids and arthropods.
- (ii) Vestigial organ in man.
- (iii) Fossils
- (iv) Extinct bird

Column II

- (a) Impressions or imprints of past animals and plants in the sedimentary rocks.
- (b) Peripatus
- (c) Auricular muscles
- (d) Seymouria

- (v) Missing link between amphibian and reptiles.
- (e) Coccyx (tail bone)
- (f) Archaeopteryx
- (g) Vermiform appendix



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139.

View the figure and fill in the following blanks :



(i) About ___ years ago, present day continents formed a single large, irregular land mass called ____

(ii) As the continents drifted away, the ___ separated them forming ___ to free intercontinental movements of organisms.

(iii) The earth has been divided into ___ biogeographical realms namely, Australian, Neotropical, ___, Oriental, Palearctic and Nearctic.

(iv) Biogeographical realms were first proposed by P.L. Sclater for specific groups of animals called ___ and were later recognized by A.R. Wallace for ___

(v) ___ had a voyage to Galapagos group of islands and later gave concept of ____

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140. Genetic basis of adaptation was demonstrated by ___ in bacteria with the help of ___ experiment

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141. _____ speciation takes place with geographic isolation while _____ speciation occurs without geographic isolation but by ecological or other isolations.

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142. Multiplicative speciation and phyletic speciation are called _____ and _____ respectively

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143. Chance elimination of the genes of certain traits in the event of migration or death of section of population by natural calamity is called _____

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144. Separation of groups of related organisms by physical barriers (e.g. seas, mountain , desert , river etc) is called ___ isolation while failure of two species to interbreed because they breed at different times (seasons) of the year is called ___ isolation .

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145. Match the items in column I with appropriate items (one or more) of column II.

Column I

- (i) Interspecific sterility
- (ii) Separation of groups of related organisms by physical barriers
- (iii) Differences in size or structure of genitalia between species
- (iv) Natural selection
- (v) Gradual speciation

Column II

- (a) Peppered moth
- (b) Allopatric speciation
- (c) Genetic isolation
- (d) Sympatric speciation
- (e) Sickle cell anaemia
- (f) Geographical isolation
- (g) Mechanical isolation

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146. The evolutionary story of moths in England during industrialisation reveals, that ' evolution is apparently reversible '. Clarify this statement.

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147. Branching descent and natural evolution are the two key concepts of Darwinian theory of evolution . Explain each concept with the help of a suitable example

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148. What are main differences between Darwin and de Vries theory of evolution ?

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149. What is adaptive radiation ? Describes it by giving example of Darwin finches

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150. What are three conditions for the origin of life ?



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151. Write a short note on Cro-magnon man



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152. What is Hardy-Weinberg principle ? List the factors which affect it



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153. Write a short note on Dryopithecus



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

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155. Explain adaptive radiation with the help of a suitable example

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156. What does the following equation represent ? Explain .

$$p^2 + 2pq + q^2 = 1$$

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157. Explain the interpretation of Charles Darwin when he observed a variety of small black birds on Galapagos Islands.

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158. Differentiate between divergent and convergent evolution. Give one example of each.

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159. If $p^2 + 2pq + q^2 = 1$. Explain this algebraic equation on the basis of Hardy Weinberg's principle.

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160. Write the characteristics of Ramapithecus , Dryopithecus and Neanderthal man.

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161. What is disturbance in Hardy- Weinberg genetic equilibrium indicative of Explain how it is caused.



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162. Rearrange Ramapithecus, Australopithecus and Homo habilis in the order of their evolution on the Earth. Comment on their evolutionary characteristics



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163. (a) Differentiate between analogous and homologous organs.

(b) Select and write analogous structures from the list given below:

(i) Wings of butterfly and birds.

(ii) Vertebrate hearts.

(iii) Tendrils of Bougainvillea and Cucurbita.

(iv) Tubers of sweet potato and potato.



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164. How can Hardy-Weinberg equilibrium be affected ? Explain giving three reasons.



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165. Compare and contrast the theories of evolution proposed by Darwin and Hugo De Vries .



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Additional Questions Long Answer Questions

1. Explain the chemical evolution up to the formation of coacervates



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2. Describe the origin of first cells from the coacervates

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3. Describes the steps of which simple inorganic substances may have undergone chemical evolution to yield complex organic molecules that could eventually form living matter

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4. Recall the experiment set up by Urey and Miller. What is the significance of their findings ?

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5. Write the short essay on the Oparin theory of origin of life

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6. Tabulate important differences between the atmosphere of the primitive earth and that of the present day earth

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7. Which sources provided energy of the chemical evolution on the primitive earth ?

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8. Describe the Pasteur's experiment which supported biogenesis

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9. How did Redi disprove abiogenesis ?

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10. Give a brief account of origin of earth

 [Watch Video Solution](#)

11. What is the Oparin theory for the origin of life ? Who experimentally supported this

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12. Describe the theory of special creation

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13. Discuss the anatomical or embryological evidences of biological evolution

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14. How does palaeontology support evolution ?

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15. "Birds have evolved from reptiles " How does palaeontology provide evidence in support of this statement ?

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16. What is meant by biogeography ? Discuss the biogeographic evidences in support of organic evolution

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17. How will you account for the following

(a) Frogs has a fish-like tadpole in its life history

(b) Embryos of birds have teeth

(c) Forelimbs of all vertebrates are basically alike

(d) Animals have certain non functional organs

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18. Name the basic characteristics of life common to all organisms

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19. Explain the following terms :

(a) Palaeontology , (b) Phylogeny , (c) Fossil , (d) Geological time scale ,

(e) Mass extinction

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20. How has the study of fossils helped in convincing scientists that organisms have come into existence through evolution ? How can the age of a fossil be determined ?



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21. What is biogeographic map ? Locate Galapagos islands in the world atlas . What was unique about these islands which helped Darwin arrive at significant concepts regarding evolution ?



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22. Explain which of the following are homologous and which are analogous ?

- (a) Fish scales and bivalve (mollusc) shell
- (b) Trunk of an elephant and hand of a chimpanzee
- (c) Wings of a bat and wing of a bird
- (d) Nails of a human being and claws of a cat
- (e) Ginger and sweet potato.



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23. Enlist some of the vestigial organs found in animals



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24. Mammals and birds have evolved from reptiles. In what way does a comparative study of their embryology establish the validity of this statement ?



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25. Write a short essay on the various kinds of evidence for evolution



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26. Discuss the cytological and taxonomic evidence in favour of evolution



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27. Write a note on current evolution. What is its significance ?

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28. Give a brief evolution of horse

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29. Write short notes on mass extinctions and fossil parks

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30. Give a brief account of Lamarck's theory of evolution

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31. Describe the theory of the inheritance of acquired characters. Who disproved it experimentally ?

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32. Describe the Darwin's theory of natural selection

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33. Explain De Vries mutation theory of evolution

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34. Give Weismann's theory of germplasm. What light does it throw on Lamarckism ?

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35. How can you show that adaptations have a genetic basis ?

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36. Tabulate difference between Darwinism and Neo-Darwinism

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37. How do hybridisation and allopolyploidy bring about speciation ?

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38. Explain the action of natural selection with reference to industrial melanism

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39. The giant squirrel *Ratufa indica* occurs along the west coast. The population living in Gujarat (dry deciduous forests) has a yellow fur , population from Maharashtra (moist deciduous forests) has light brown fur , that from Mysore (semi-evergreen forests) deep-brown and from Kerala (wet evergreen forests) chocolate-brown fur.

(a) Account for the difference in their fur colour.

(b) How would you explain that they belong to the same species ?



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40. Discuss the role of variation in evolution



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41. How can the long neck of giraffe be explained through the principle of natural selection ? How does it differ from the Lamarckian interpretation ?



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42. What is artificial selection? Do you think it affects the process of natural selection? How

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43. A group of pesticide sprayers were worried about their profession when all the mosquitoes got exterminated . How can you explain that such an anxiety was based on ignorance.

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44. It is expected that selection pressure should have eliminated the gene for sickle-cell anaemia. How would you account for its continuance in human population ?

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45. How do new species originate in nature ?

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46. What is the role of 'isolation ' in evolution ?

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47. Briefly summarise and write a paragraph on the modern concept of evolution

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48. Compare the basic features of the theories of Darwin, Lamarck and de-Vries

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49. How do apes and man differ ?

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50. Give an account of primate evolution upto the appearance of Dryopithecus.

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51. Depict human evolution with the help of a figure

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52. Show the primate evolution with the help of a diagram

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53. What are the major structural changes that occurred in man due to bipedality ?

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54. In which epochs did the human evolution occur ?

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55. Comment on 'Ramapithecus ' and 'Sivapithecus ' as early human ancestors

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56. Classify the human species. What data would you provide to show that the evolutionary history of human beings is like that of any other organism ?





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57. What traits are unique to the human species among the primates ?



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58. As a student of biology trace the evolutionary history of man



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59. What roles have cell and molecular biology played in solving problems of human ancestry ?



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60. Explain divergent evolution in detail. What is the driving force behind it ?



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61. You have studied the story of peppered moths in England. Had the industries been removed, what impact could it have on the moth population ? Discuss.

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62. Describe the Hardy-Weinberg principle

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63. Describe the natural selection giving the example of peppered moth

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64. Describe the Charles Darwin's theory of natural selection .

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65. Point out the differences between Darwinism and NeoDarwinism



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66. Explain the increases in the numbers of melanic(dark winged) moths in the urban areas of post-industrialisation period in England.



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67. How does the process of natural selection affect Hardy-Weinberg equilibrium? Explain List the other four factors that disturb the equilibrium.



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68. a) Explain Darwinian theory of evolution with the help of one suitable example. State the two key concepts of the theory.

b) Mention any three characteristics of Neanderthal man that lived in near east and central Asia.

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69. a) How do the observations made during moth collection in pre- and postindustrialized era in England support evolution by Natural Selection?

b) Explain the phenomenon that is well represented by Darwin's finches other than natural selection.

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Analytical Question

1. What role does an individual organisms play as per Darwin's theory of natural selection?



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2. How can you explain the existence of analogous organs ?



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3. A chimpanzee holds objects with hand and an elephant with its proboscis (trunk). Are these organs analogous or homologous ? Give reasons for your answer



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4. Did aquatic life get fossilised ? If, yes where do we come across such fossils. ?

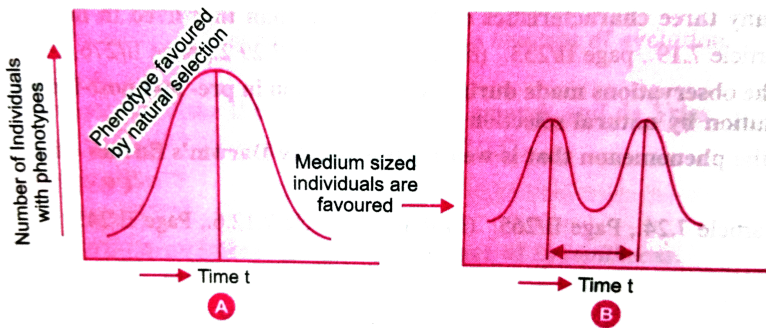


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5. What are we referring to when we referring to when we say 'simple organism ' or ' complex organism' ?

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6. Study the given figures (a) and (b) and answer the questions given below :



(i) Under the influence of which type of natural selection would graph (a) become like graph (b) ?

(ii) what could be the likely reasons of new variations arising in the population ?

(iii) Who suggested natural selection as a mechanism of evolution ?

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7. How did Louis Pasteur successfully demolish the popular theory of spontaneous generation ?

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8. "A population has been exhibiting genetic equilibrium". Answer the following with regard to the above statement.

(i) Explain the above statement.

(ii) Name the underlying principle.

(iii) List any two factors which would upset the genetic equilibrium of the population.

(iv) Take up any one such factor and explain how the gene pool will change due to that factor

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9. In 1950s, there were hardly any mosquitoes in Delhi. To use of the pesticide DDT on standing water killed their larvae. It is believed that now there are mosquitoes because they evolved DDT resistance through the interaction of mutation and natural selection. Point wise state in a sequence how that could have happened ?

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10. State in what ways Stanley Miller simulated the conditions of :

(i) primitive atmosphere on earth

(ii) energy source at the time of origin of life , and (iii) formation of organic molecules of life to prove the theory of chemical evolution ?

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11. Can the host-parasite relationship provide evidence for evolution ?

Explain

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12. Australia has egg-lying and pouched mammals that occur nowhere else. How can it be explained by evolutionists ?



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



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14. Name the specific terms being used for the following statements :

(a)The chance elimination of the genes of certain traits when a section of population migrates or dies of natural calamity is referred to as

(b)Change in the morphology and number of chromosomes at times is referred to as ...

(c)A small group of human beings leave their homes to find a new

settlement. This result in the formation of a different genotype in new settlement. It is called ...

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15. Give reasons for the following statements :

(a) Placental wolf and Tasmanian wolf exist sharing the same habitat.

(b) Study of fossils provide us the direct and most reliable evidences of evolution

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16. What kind of evolution has brought similarity in the following examples :

(i) Placental cat and a marsupial cat

(ii) Fishes and whales

(iii) Darwin's finches

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

(i)occurrence of short tail in some babies

(ii)presence of additional mammae in two rows down the front of the body of some persons

(iii)power of moving pinna,

(iv)presence of very long and dense hair on the body

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



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18. Special kind of evolution has brought the similarity as seen in fins of fishes and flippers of dolphins .Give reasons . Also name the kind of evolution also.



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19. What is the possible reason for ineffectiveness of DDT in killing mosquitoes now a days ?

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20. When is adaptive radiation be referred to as parallel evolution ?
Explain and give an example.

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Practice Question Multiple Choice Question

1. Birbal Sahni Institute of Palaeobotany is located in

- A. Delhi
- B. Lucknow
- C. Dehradun
- D. Kolkata

Answer: B



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2. 3.5 billion years ago, which flora dominated the earth ?

A. Archaeobacteria

B. Mosses

C. Lichens

D. Blue-green algae

Answer: D



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3. A connecting link between reptiles and birds is

A. Dimetrodon

B. Dodo

C. Archaeopteryx

D. Sphenodon

Answer: C



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4. The diversity in the type of beaks of finches adapted to different feeding habits on the galapagos islands, as observed by Darwin provides evidence for

A. Origin of species by natural selection

B. Intraspecific variation

C. Intraspecific competition

D. Interspecific competition

Answer: A



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5. Galapagos islands are connected with which scientist :

A. Wallace

B. Malthus

C. Darwin

D. Lamarck

Answer: C



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6. In the developmental history of mammalian heart. It is observed that it passes through a two chambered fish like heart, three chambered frog like heart and finally four chambered stage. To which hypothesis can this above cited statement be approximated?

- A. Biogenetic law
- B. Hardy-Weinberg law
- C. Lamarck's principle
- D. Mendelian principles

Answer: A

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7. Genetic drift operates only in

- A. Island populations
- B. Smaller populations
- C. Larger populations
- D. Mendelian populations

Answer: B

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8. Species occurring in different geographical area are called as

- A. Sibling
- B. Neopatric
- C. Sympatric
- D. Allopatric

Answer: D



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9. Which of the following statements is correct ?

- A. Cro-Magnon man's fossil has been found in Ethiopia
- B. Australopithecus is the real ancestor of modern man
- C. Homo erectus is the ancestor of man

D. Neanderthal man is direct ancestor of Homo sapiens

Answer: D



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10. The abiogenesis occurred about how many billion years ago

A. 1.2

B. 1.5

C. 2.5

D. 3.5

Answer: D



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11. The surprise products in the Miller's experiment were

A. Peptides

B. Nucleotides

C. Nucleic acids

D. Amino acids

Answer: D



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12. Who demonstrated existence of life in the boiled broth flask ?

A. Darwin

B. Pasteur

C. Francisco Redi

D. None of these

Answer: B



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13. Who did an experiment to prove that " The organic compounds were thers of life "?

- A. Darwin
- B. Melwin Calvin
- C. Sydney Fox
- D. Miller and Urey

Answer: D



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14. Chemical theory for origin of life was given by

- A. stanley Miller
- B. Spallanzani
- C. Oparin and Haldane

D. Louis Pasteur

Answer: C



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15. Wings of pigeon, mosquito and bat show

A. Convergent evolution

B. Divergent evolution

C. Atavism

D. All of these

Answer: A



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16. Adaptive similarities in animals of the same habitat constitute

A. Retrogressive evolution

B. parallel evolution

C. Adaptive radiation

D. Convergent evolution

Answer: D



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17. Development of patagia in animals is an

A. Volant

B. Arboreal

C. Aquatic

D. Cave

Answer: A



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18. Golden age of reptiles was

- A. Palaeozoic
- B. Mesozoic
- C. Cenozoic
- D. Proterozoic

Answer: B



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19. The earliest fossil form in the phylogeny of horse is

- A. Eohippus
- B. Merychippus
- C. Mesohippus

D. Equus

Answer: A



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20. Lamarck's theory of evolution is called :

- A. Survival of the fittest
- B. Special creation theory
- C. Inheritance of acquired characters
- D. None of these

Answer: C



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21. Hominids originated during

A. Pliocene

B. Palaeocene

C. Miocene

D. Oligocene

Answer: A



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22. Theory of spontaneous generation was given by

A. Spallanzani

B. Von Helmont

C. F.Redì

D. Louis Pasteur

Answer: B



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23. Which is the most advanced theory of origin of life ?

- A. Spontaneous
- B. Catastrophic
- C. Oparin and Haldane
- D. Non-spontaneous

Answer: C



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24. Theory of spontaneous generation was given by

- A. Louis Pasteur
- B. Spallanzani
- C. F.Redì

D. Van Helmont

Answer: D



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25. The first organisms were

A. Chemoautotrophs

B. Chemoheterotrophs

C. Cyanobacteria

D. Bacteria

Answer: B



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26. Darwin's finches show one of the following aspects of evolution.

A. Biogeographic evidence

B. Industrial melanism

C. Biochemical evidence

D. Embryological evidence

Answer: A



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27. Among the following , a structure , which is not vestigial , is

A. Wisdom teeth

B. Plica semilunaris

C. Vermiform appendix

D. Nails

Answer: D



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28. Cause of speciation is

- A. Random mating
- B. Hybridization
- C. Isolation
- D. Migration

Answer: C



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29. Cranial capacity is minimum in

- A. Chimpanzee
- B. Gorilla
- C. Rhesus monkey

D. Orangutan

Answer: C



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30. Closest primate relative of human being is

A. Gorilla

B. Orangutan

C. Lemur

D. Rhesus monkey

Answer: A



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31. Swan-necked flask experiment was performed by

- A. Aristotle
- B. Francisco Redi
- C. Louis Pasteur
- D. Robertkoch

Answer: C

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32. The first organisms were

- A. Chemoautotrophs
- B. Chemoheterotrophs
- C. Cyanobacteria
- D. Bacteria

Answer: B

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33. Postanal tail can be traced in

- A. Cobra
- B. Earthworm
- C. Scorpion
- D. Centripede

Answer: A



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34. Evolutionary development of a species can be best studied by

- A. DNA analysis
- B. Finding age by carbon dating
- C. Studying fossils of this species

D. All of these

Answer: C



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35. Sickle-cell anaemia, the best example of natural selection, is due to gene modification related to amino acid of

A. First β chain

B. Second β chain

C. First α chain

D. Second α chain

Answer: B



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36. Darwin's theory does not include

- A. Natural selection
- B. Survival of the first
- C. Evolution through inheritance
- D. Struggle for existence

Answer: C



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37. According to abiogenesis , life originated from

- A. Nonliving
- B. Other planets
- C. Preexisting
- D. Spontaneously

Answer: A



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38. There is not life on moon because there is no

- A. Water
- B. Oxygen
- C. Nitrogen
- D. Hydrogen

Answer: A



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39. Which of these pairs is vestigial ?

- A. Coccyx and pinna muscles

B. Coccyx and premolar

C. Facial hair in ladies

D. Coccyx and intercostal muscles

Answer: A



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40. Evolution can be studied now in action in

A. Sphenodon

B. Archaeopteryx

C. Peppered moth

D. Paramecium

Answer: C



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41. Human evolution originated in

- A. Africa
- B. Jawa
- C. France
- D. China

Answer: A



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42. A bacterial culture is treated with streptomycin and a cast is made . A few columns are able to survive due to

- A. Selection
- B. Adaptation
- C. Induced mutation
- D. Mimicry

Answer: B



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43. Darwin's theory states that

- A. Characters are acquired through inheritance
- B. Nature selects species which can adapt
- C. Species change morphologically with nature
- D. Affect of environment on evolution

Answer: B



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44. Which evolutionary book is most accepted worldwide after bible ?

- A. Philosophic Zoologique, Lamarck

B. Origin of Life , Oparin

C. Origin of Species , Darwin

D. Mutation and Origin of Species , de Vries

Answer: C



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45. Which one of the following is present today but was absent about 3.5 billion years ago ?

A. Nitrogen

B. Oxygen

C. Hydrogen

D. Methane

Answer: B



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46. Theory of spontaneous generation was given by

- A. Louis Pasteur
- B. F. Redi
- C. Von Helmont
- D. Spallanzani

Answer: C



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47. Coacervates are

- A. Colloidal droplets
- B. Contain nucleoprotein
- C. (a) and (b)
- D. Protobiont

Answer: C



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48. Which one is not a vestigial organ?

- A. Wings of Kiwi
- B. Flipper of seal
- C. Coccyx in man
- D. Splint bone of horse

Answer: B



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49. Wings of bird and bat are

- A. Homologous but not analogous

B. Neither homologous nor analogous

C. Vestigial

D. Both homologous and analogous

Answer: D



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50. Convergent evolution is illustrated by

A. Rat and dog

B. Starfish and Cuttle fish

C. Bacterium and protozoan

D. Dogfish and whale

Answer: D



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51. Recapitulation theory was given by

- A. Haeckel
- B. Darwin
- C. Lamarck
- D. Hugo de Vries

Answer: A



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52. Darwin in his 'Natural Selection Theory' did not believe in any role of which one of the following in organic evolution

- A. Survival of the fittest
- B. Struggle for existence
- C. Discontinuous variations
- D. Parasites and predators as natural enemies.

Answer: C



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53. 'Use and disuse' theory was proposed by

A. Lamarck

B. Darwin

C. Hugo de Vries

D. Malthus

Answer: A



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54. Who had proposed the theory of natural selection ?

A. August Weismann

B. De Vries

C. Charles Darwin

D. Charles Darwin and Alfred Wallace

Answer: C



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55. According to Oparin, which one of the following was not present in the primitive atmosphere of the earth?

A. Oxygen

B. Hydrogen

C. Water Vapour

D. Methane

Answer: A



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56. The gases used in the spark-discharge apparatus were -

- A. NH_3 , NH_4 and O_2
- B. O_2 , CO_2 and NH_3
- C. CO_2 , NH_3 and CH_4
- D. H_2 , CH_4 and NH_3

Answer: D



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57. Coacervates were experimentally produced by

- A. Sidney Fox and Oparin
- B. Fischer and Huxley
- C. Jacob and Monod
- D. Urey and Miller

Answer: A



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58. Presence of gills in the tadpole of frog indicates that :

- A. fishes evolved from frog-like ancestors
- B. frogs will have gills in future
- C. frogs evolved from gilled ancestors
- D. fishes were amphibious in the past

Answer: C



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59. Which one of the following is a living fossil

- A. Moss

B. Saccharamyces

C. Spirogyra

D. Cycus

Answer: D



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60. Diversification in plant life appeared

A. due to abrupt mutations

B. suddenly on earth

C. by seed dispersal

D. due to long periods of evolutionary changes

Answer: D



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61. Age of fossils in the past was generally determined by radiocarbon method and other methods involving radioactive elements found in the rocks. More precise methods, which were used recently and led to the revision of the evolutionary periods for different groups of organisms, includes

- A. Study of the conditions of fossilization
- B. electron spin resonance (ESR) and fossil DNA
- C. study of carbohydrates / proteins in rocks
- D. study of carbohydrates / proteins in fossils.

Answer: B



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62. A baby has been born with a small tail. It is a case exhibiting

- A. restrogressive evolution

B. mutation

C. atavism

D. metamorphosis

Answer: C



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63. The most likely reason for the development of resistance against pesticides in insects damaging a crop is

A. genetic recombination

B. directed mutations

C. acquired heritable changes

D. random mutations

Answer: C



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64. Which one of the following experiments suggests that simplest living organisms could not have originated spontaneously from non-living matter

- A. larvae could appear in decaying organic matter
- B. microbes did not appear in stored meat
- C. microbes appeared from unsterilized organic matter
- D. meat was not spoiled , when heated and kept sealed in a vessel

Answer: D



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65. Hogo de Vries gave his mutation theory on organic evolution while working on :

- A. *Pisum sativum*

B. *Drosophila melanogaster*

C. *Oenothera lamarckiana*

D. *Althea rosea*

Answer: C



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66. Which one of the following phenomena supports Darwin's concept of natural selection in organic evolution?

A. development of transgenic animals

B. production of 'dolly', the sheep by cloning

C. prevalence of pesticides resistant insects

D. development of organs from 'stem cells' for organ transplantation

Answer: C



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67. Which of the following is the relatively most accurate method for dating of fossils ?

- A. radio-carbon method
- B. potassium -argon method
- C. electron-spin resonance method
- D. uranium - lead method

Answer: C



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68. The biogenetic law of Haeckel is

- A. Omnis vivum-e-vivum
- B. Omnis cellula-e-cellula
- C. Ontogeny repeats phylogeny

D. phylogeny repeats ontogeny

Answer: C



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69. Human ancestors who left cave paintings were

A. neanderthal man

B. cromagnon man

C. java apeman

D. peking man

Answer: B



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70. An important evidence in favour of organic evolution is the occurrence of :

- A. homologous and analogous organs
- B. homologous and vestigial organs
- C. analogous and vestigial organs
- D. homologous organs only

Answer: B



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71. The evolutionary history of an organism is known as

- A. ontogeny
- B. phylogeny
- C. ancestry
- D. paleontology

Answer: B



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72. Jurassic period of the Mesozoic era is characterised by

- A. flowering plants and first dinosaurs appear
- B. gymnosperms and dominant plants and first birds appear
- C. radiation of reptiles and origin of mammal like reptiles
- D. dinosaurs become extinct and angiosperms appear

Answer: B



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73. Which of the following is the most evident source of evolution

- A. fossils

B. morphology

C. embryo

D. vestigial organs

Answer: A



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74. The unit of natural selection is :

A. an individual

B. a species

C. a genus

D. a population

Answer: A



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

A. carbon

B. Oxygen

C. Hydrogen

D. nitrogen

Answer: B



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76. The concept of chemical evolution is based on :

A. interaction of water, air and clay under intense heat

B. effect of solar radiation on chemicals

C. possible origin of life by combination of chemicals under suitable environmental conditions

D. crystallization of chemicals

Answer: C



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77. Which one of the following statements is correct ?

- A. there is no evidence of the existence of gills during embryogenesis of mammals
- B. all plant and animal cells are totipotent
- C. Ontogeny repeats phylogeny
- D. stem cells are specialized cells.

Answer: C



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78. The finches of Galapagos islands provide an evidence in favour of

- A. evolution due to mutation
- B. retrogressive evolution
- C. biogeographical evolution
- D. special creation

Answer: C



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79. When two species of different genealogy come to resemble each other as a result of adaptation, the phenomenon is termed

- A. microevolution
- B. Co-evolution
- C. Convergent evolution
- D. divergent evolution

Answer: C



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80. Among the human ancestors the brain size was more than 1000 cc in:

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

Answer: D



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81. Industrial melanism as observed in peppered moth proves that

- A. the melanic form of the moth has no selective advantage over lighter form in industrial area
- B. the lighter form moth has no selective advantage either in polluted industrial area or non-polluted area
- C. melanism is a pollution-generated feature
- D. the true black melanic forms arise by a recurring random mutation

Answer: D



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82. Adaptive radiation refers to

- A. evolution of different species from a common ancestor
- B. migration of members of a species to different geographical area
- C. power of adaptation in an individual to a variety of environments
- D. adaptations due to geographical isolation

Answer: A



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83. Select the correct statement from the following ?

- A. Fitness is the end result of the ability to adapt and gets selected by nature
- B. All mammals except whales and camels have seven cervical vertebrae
- C. Mutations are random and directional
- D. Darwinian variations are small and directionless

Answer: A



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84. What is common of Whale, Seal and Shark?

- A. thick subcutaneous fat
- B. convergent evolution
- C. homiothermy
- D. seasonal migration

Answer: B

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85. One of the important consequences of geographical isolation is

- A. preventing speciation
- B. speciation through reproductive isolation
- C. random creation of new species
- D. no change in the isolated fauna

Answer: B

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86. First organism to evolve on the earth were

- A. Saprotrophs
- B. Photoautotrophs
- C. Chemoautotrophs
- D. Chemoheterotrophs

Answer: D



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87. Miller and Urey performed an experiment to prove the origin of life.

They took gases ammonia and hydrogen alongwith

- A. N_2 and H_2O
- B. H_2O and CH_4
- C. CH_4 and N_2

D. CO_2 and NH_3

Answer: B



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88. The book "Philosophie Zoologique" was written by :

A. Wallace

B. Oparin

C. Lamarck

D. Darwin

Answer: C



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89. The age of fossils is determined by

- A. analysis of bones
- B. radioactive C^{14} dating
- C. electron microscopy
- D. weighting the fossils

Answer: B

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90. Which of the following statements is correct ?

- A. Homo erectus is the ancestor of man
- B. Cromognon man's fossil has been found in Ethiopia
- C. Australopithecus is the real ancestor of modern man
- D. Cromagnon man is the most recent ancestor of Homo sapiens

Answer: D

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91. Connecting link between annelida and mollusca is

- A. Neopilina
- B. Glochidium larva
- C. Nautilus
- D. Velliger larva

Answer: A



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92. The idea of Natural Selection as the fundamental process of evolutionary changes was reached

- A. By Alfred Russel Wallace in 1901
- B. Independently by Charles Darwin and Alfred Russel Wallace in 1859
- C. Independently by Charles Darwin and Alfred Russel Wallace in 1901

D. By Charles Darwin in 1866

Answer: B



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93. First mammal occur in which era -period ?

A. Permian -Palaeozoic

B. Triassic - Mesozoic

C. Tertiary-Coenozoic

D. None of these

Answer: B



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94. Which one is linked to evolution ?

- A. Extinction
- B. Competition
- C. Variation
- D. Reproduction

Answer: C

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95. Archaeopteryx is a connecting link between :

- A. reptiles and birds
- B. birds and mammals
- C. amphibians and reptiles
- D. None of these

Answer: A

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

- A. environment pressure causes variation
- B. rate and survival of organism is different due to variation
- C. Inheritance of acquired characters
- D. if an organ is used constantly it will continuously increase in size

Answer: B



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97. Thorn of Bougainvillea and tendrils of Cucurbita are examples of :

- A. vestigial organs
- B. retrogressive evolution
- C. analogous organs

D. homologous organ

Answer: D



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98. Darwin's Finches are an excellent example of

A. brood parasitism

B. connecting links

C. Adaptive radiation

D. seasonal migration

Answer: C



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99. Which one of the following incorrect about the characteristic of protobionts (coacervates and microspheres) as envisaged in abiogenic origin of life ?

- A. they were partially isolated from the surroundings
- B. they could maintain an internal environment
- C. they were able to reproduce
- D. they could separate combinations of molecules from the surroundings

Answer: C



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100. Which one of the following scientist's name is correctly matched with the theory put forth by him?

- A. De Vries - Natural selection

B. Mendel- Theory of Pangenesis

C. Weismann - Theory of continuity of germplasm

D. Pasteur - Inheritance of acquired characters

Answer: C



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101. Match the scientists and their contributions in the field of evolution

Name of the Scientist		Contributions	
A.	Charles Darwin	1.	Mutation theory
B.	Lamarck	2.	Germ plasm theory
C.	Hugo de Vries	3.	Philosophie Zoologique
D.	Ernst Haeckel	4.	The Origin of species
E.	August Weismann	5.	Biogenetic law
		6.	Essay on population

A. A-4,B-3,C-1, D-5,E-2

B. A-4,B-3,C-5, D-1,E-6

C. A-4,B-4,C-5, D-3,E-1

D. A-2,B-3,C-1, D-5,E-2

Answer: A



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102. 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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103. Industrial melanism was highlighted by

- A. *Mimosa pudica*
- B. *Triticum aestivum*
- C. *Biston betularia*
- D. rock python

Answer: C

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104. This is not Darwinian concept

- A. variations
- B. struggle for existence
- C. natural selection
- D. survival of the fittest

Answer: D

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105. One of the oldest, best preserved and most complete hominid fossil commonly known as 'lucky" belongs to the genus

- A. oreopithecus
- B. Dryopithecus
- C. Pithecanthropus
- D. Australopithecus

Answer: D



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106. Which one of the following ancestors of man first time showed bipedal movement?

- A. Australopithecus
- B. Cro-magnon

C. java apeman

D. peking man

Answer: A



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107. Who was the first to discard the idea of fixity of species

A. Jean Baptist Lamarck

B. Charles Darwin

C. Robert Hooke

D. William Harvey

Answer: A



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108. Name of the scientist who gave Mutation Theory :

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

Answer: D



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109. Which one of these is not a case of artificial selection

- A. shetland pony
- B. great dane dog
- C. broccoli
- D. peppered moth

Answer: D



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110. Amphibians were dominant during

A. carboniferous

B. silurian

C. ordovician

D. cambrian

Answer: A



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111. Which one of the following periods is largely associated with extinction of dinosaurs and the increase in flowering plants and reptiles

A. Jurassic

B. triassic

C. cretaceous

D. permian

Answer: C



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112. According to abiogenesis life originates from:

A. non-living

B. pre-existing life

C. chemicals

D. extra-terrestrial matter

Answer: A



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113. Darwin judged the fitness of an individual by

- A. ability of defend itself
- B. strategy to obtain food
- C. number of offspring
- D. dominance over other individuals

Answer: C



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114. Mass extinction at the end of Mesozoic era was probably due to

- A. continental drift
- B. the collision of earth with large meteorites
- C. massive glaciations

D. change in earth's orbit

Answer: B



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115. Tachyglossus is a connecting link between

A. reptiles and birds

B. amphibians and reptiles

C. birds and mammals

D. reptiles and mammals

Answer: D



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116. Reproductive isolation between segments of a single populations is termed

- A. sympatry
- B. allopatry
- C. population divergence
- D. disruptive divergence

Answer: A



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117. Which of the following is a connecting link between mammals and reptiles

- A. Peripatus
- B. Balanoglossus
- C. Ornithorhynchus

D. Archaeopteryx

Answer: C



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118. Which one of the following was not given by Darwin's theory of evolution

A. Stuggle for existence

B. over production

C. natural selection

D. genetic drift

Answer: D



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119. Darwin's finches provide an excellent evidence in favour of evolution.

This evidence comes from the field of :

- A. embryology
- B. palaeontology
- C. biogeography
- D. anatomy

Answer: C



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120. Miller and Urey performed an experiment to prove the origin of life.

They took gases ammonia and hydrogen alongwith

- A. methane, ethane , ammonia, water vapour
- B. methane, ammonia, hydrogen , water vapour
- C. methane, ethane , hydrogen , ammonia

D. ammonia , water vapour , butane , hydrogen

Answer: B



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121. Haeckel's biogenetic law is

A. ontogeny repeats phylogeny

B. phylogeny repeats ontogeny

C. reproductive isolation

D. every organism is produced by its parents

Answer: A



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122. Origin of first toothed birds and gymnoperms took place during

A. cretaceous

B. triassic

C. jurassic

D. permian

Answer: C



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123. Ultimate source of organic variation is the process which provide raw materials for evolution is

Or

The concept of sudden genetic change which breeds true in a species is represented as

A. sexual reproduction

B. meiosis

C. mutation

D. independent assortment

Answer: C



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124. The prehistoric man which lived on earth during late pleistocene period

A. neanderthal man

B. Australopithecus

C. CroMagnon

D. Atlantic man

Answer: A



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125. According to the theory of mutation by Hugo de Vries

- A. only small mutation takes part in variation
- B. only large mutation takes part in variation
- C. both small and large mutation cause variation in species
- D. None of the above

Answer: C



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126. A living connective link which provides evidence for organic evolution

- A. Sphenodon between reptile and bird
- B. lung fishes between pisces and reptile
- C. Archaeopteryx between reptile and bird
- D. duck-billed platypus between reptiles and mammals

Answer: D



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127. Which of the following are not analogous organs ?

- A. fins of fishes and flippers of whales
- B. string of honey bee and scorpion
- C. thorn of Bougainvillea and tendrils of Cucurbita
- D. wings of insect and wings of pterodactyl

Answer: C



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128. On the basis of hereditary material, the most closest relative of man is :

A. Chimpanzee

B. Gorilla

C. orangutan

D. gibbon

Answer: A



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129. Peripatus is a connecting link between

A. Coelenterates and Porifera

B. Ctenophora and Platyhelminthes

C. Mollusca and Echinodermata

D. Annelida and Arthropoda

Answer: D



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130. In the case of peppered moth (*Biston betularia*) the black-coloured form became dominant over the light-coloured form in England during industrial revolution. This is an example of

- A. inheritance of darker colour character acquired due to the darker environment
- B. natural selection whereby darker forms were selected
- C. appearance of the darker coloured individual due to very poor sunlight
- D. protective mimicry

Answer: B



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131. 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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132. For the MN-blood group system, the frequencies of M and N alleles are 0.7 and 0.3, respectively. The expected frequency of MN-blood group bearing organisms is likely to be

A. 42 %

B. 49 %

C. 9 %

D. 58 %

Answer: A



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133. Which type of selection explains industrial melanism observed in moth, *Biston bitularia*

- A. Stabilising
- B. Directional
- C. Disruptive
- D. Artificial

Answer: B



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134. The most accepted line of descent in human evolution is

A. Australopithecus → Ramapithecus → Homo sapiens → homo habilis

B. Homo erectus → Homo habilis → Homo sapiens

C. Ramapithecus → Homo habilis → Homo erectus → Homo sapiens

D. Australopithecus → Ramapithecus → Homo erectus → Homo habilis → Homo sapiens

Answer: C

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135. Which of the following is an example for link species

A. Lobe fish

B. Dodo bird

C. Sea weed

D. Tyrannosaurus rex

Answer: A

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136. Match the scientists listed under Column 'A' with ideas listed under column 'B'

Column I column II

Darwin (i) Abiogenesis

Oparin (ii) Use and disuse of organs

Lamarck (iii) continental drift theory

Wagner (iv) Evolution by natural selection

A. (i)-(M), (ii)-(P) , (iii)-(N) , (iv)-(O)

B. (i)-(P), (ii)-(M) , (iii)-(N) , (iv)-(O)

C. (i)-(N), (ii)-(P) , (iii)-(O) , (iv)-(M)

D. (i)-(P), (ii)-(O) , (iii)-(N) , (iv)-(M)

Answer: B

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137. In 1953 S.L. Miller created primitive earth conditions in the laboratory and gave experimental evidence for origin of first form of life pre-existing non-living organic molecules. The primitive earth condition created include

- A. low temperature , volcanic storms, atmosphere rich in oxygen
- B. low temperature , volcanic storms , reducing atmosphere
- C. high temperature , volcanic storms , non-reducing atmosphere
- D. high temperature , volcanic storms , reducing atmosphere containing CH_4 , NH_3 etc

Answer: D



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138. Variations during mutations of meiotic recombinations are

- A. random and directionless
- B. random and directional
- C. random and small
- D. random , small and directional

Answer: A

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139. Darwin's finches were a good example of

- A. Convergent evolution
- B. Industrial melanism
- C. connecting link
- D. adaptive radiation

Answer: D

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140. Given below are four statements (A-D) each with one or two blanks.

Select the option which correctly fills up the blanks in two statements.

(A) Wings of butterfly and birds look alike and are the results of i evolution.

(B) Miller showed that CH_4 , H_2 , NH_3 and i when exposed to electric discharge in a flask resulted in formation of ii

(C) Vermiform appendix is a i organ and an ii evidence of evolution.

(D) According to Darwin, evolution took place due to i and ii or the fittest.

A. (D)-(i) Small variations , (ii) survival, (A)-(i) convergent

B. (A)-(i) convergent, (B)-(i) Oxygen, (ii) Nucleosides

C. (B)-(i) water vapour, (ii) Amino acids, (C)-(i) Rudimentary ,
(ii) Anatomical

D. (C)-(i) Vestigial, (ii) Anatomical , (D) - (i) Mutations, (ii) Multiplication

Answer: A



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141. According to Darwin, evolution is

- A. a slow, sudden and discontinuous process
- B. a slow and discontinuous process
- C. a sudden but discontinuous process
- D. a slow, gradual and continuous process

Answer: D



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142. 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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143. Which one of the following correctly describes the homologous structures?

- A. organs with anatomical similarities , but performing different functions
- B. organs with anatomical dissimilarities , but performing different functions
- C. organs that have no function now , but had important functions in ancestors
- D. organs appearing only in embryonic stage and disappearing later in the adult

Answer: A



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144. An evolutionary pattern characterised by a rapid increase in number and kinds of closely related species is called

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

Answer: C



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145. A common means of sympatric speciation is

- A. polyploidy
- B. temporal segregation of breeding season
- C. spatial segregation of mating sites
- D. imposition of geographic barrier.

Answer: B

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146. The most apparent change during the evolutionary history of Homo-sapients is traced in

- A. shorting of the jaws
- B. remarkable increase in the brain size
- C. loss of body hair
- D. walking upright

Answer: B

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147. 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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148. Sweet potato is homologous to

- A. potato
- B. colocasia

C. ginger

D. turnip

Answer: D



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

A. Adaptive radiation

B. Natural selection

C. Migration

D. divergent evolution

Answer: A



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150. Which one of the following options gives one correct example each of convergent evolution and divergent evolution ?

A.

Convergent evolution

Divergent evolution

Eyes of octopus and mammals

Bones of forelimbs of vertebrates

B.

Convergent evolution

Divergent evolution

Thorns of Bougainvillia and tendrils of Cucurbita

Wings of butterfly

C.

Convergent evolution

Divergent evolution

Bones of forelimbs of vertebrates

Wings of butterfly and birds

D.

Convergent evolution

Divergent evolution

Thorns of Bougainvillia and tendrils of Cucurbita

Eyes of Octopus

Answer: A



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

- A. shorting of the jaws
- B. Binocular vision
- C. Increasing cranial capacity
- D. Upright posture

Answer: D



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152. The extinct human who lived 100000 to 40000 years ago, in Europe, Aisa and parts of Africa, with short stature, heavy eye brows, retreating fore heads, large jaws with heavy teeth, stocky bodies, a lumbering gait and stooped posture was

- A. Homo habilis

B. Neanderthal human

C. Cro-magnan human

D. Ramapithecus

Answer: B



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153. The origin of mammal like reptiles occurred in

A. triassic period

B. permian period

C. jurassic period

D. tertiary period

Answer: B



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154. Biogenetic law as given by Haeckel states that

- A. ontogeny recapitulates phylogeny
- B. phylogeny recapitulates ontogeny
- C. ontogeny and phylogeny go together
- D. there is no relationship between phylogeny and ontogeny

Answer: A



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155. An evolutionary pattern characterised by a rapid increase in number and kinds of closely related species is called

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

Answer: B::C



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156. In his classic experiment on the formation of amino acids. Stanley Miller passed an electric discharge in a mixture of

Or

Stanley Miller has put the oparin-Haldane theory to test in 1953 by creating in the laboratory, the probable condition of the primitive earth.

In the experiment, simple amino acids were synthesized from which of the following mixture as observed after 18 days

A. H_2 , O_2 , N and H_2O

B. CH_4 , CN , H_2 and O_2

C. H_2 , NH_3 , CH_4 and water vapour

D. NH_3 , CH_4 and O_2

Answer: C





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157. According of Darwin, the organic evolution is due to

- A. interspecific competition
- B. Competition within closely related species
- C. reduced feeding efficiency in one species due to the presence of interfering species
- D. intraspecific

Answer: A



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158. The eye of octopus and eye of cat show different patterns of structure, yet they perform similar function. This is an example of

- A. homologous organs that have evolved due to divergent evolution

- B. analogous organs that have evolved due to convergent evolution
- C. analogous organs that have evolved due to divergent evolution
- D. homologous organs that have evolved due to convergent evolution

Answer: B



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159. The process by which organisms with different evolutionary history evolve similar phenotypic adaptations in response to a common environmental challenge is called :

- A. Convergent evolution
- B. non-random evolution
- C. Adaptive radiation
- D. natural selection

Answer: A



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160. Variation in gene frequencies within populations can occur by chance rather than by natural selection. This is referred to as

- A. genetic drift
- B. random mating
- C. genetic load
- D. genetic flow

Answer: A



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161. What are sympatric species

- A. geographic isolation
- B. reproductive isolation

C. isolation / separation

D. migration

Answer: B



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162. Flame cells and Malpighian tubules are the analogous organ in

A. insects and arthropods respectively

B. arthropods and echinodermates respectively

C. platyhelminthes and arthropods with other insects respectively

D. arthropods and other insect with platyhelminthes respectively

Answer: C



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163. Forelimbs of cat, lizard used in walking , fore-limbs of whale used in swimming and forelimbs of bats used in flying are an example of :

- A. Analogous organs
- B. Adaptive radiation
- C. Homologous organs
- D. Convergent evolution

Answer: C



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164. Which one of the following are analogous structures

- A. Wings of bat and wings of pigeon
- B. Gills of prawn and lungs of man
- C. Thorns of Bougainvillea and Tendrils of Cucurbita
- D. Flippers of dolphin and legs of horse

Answer: A



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165. Phylogenetic system of classification includes

- A. evolutionary trends only
- B. genetic trends only
- C. evolutionary trend as well as morphology
- D. behavioural trends in environment

Answer: A



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166. Wings of pigeon, mosquito and bat show

- A. atavism

B. convergent evolution

C. divergent evolution

D. mutation

Answer: B



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167. At a particular locus, frequency of 'A' allele is 0.6 and that of 'a' is 0.4. what would be the frequency of heterozygotes in a randomly mating population of equilibrium ?

A. 0.16

B. 0.36

C. 0.48

D. 0.24

Answer: C



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168. The wings of a bat and the wings of an insect are :

- A. Homologous structures and represent convergent evolution
- B. Homologous structures and represent divergent evolution
- C. Analogous structures and represent convergent evolution
- D. Phylogenetic structures and represent divergent evolution

Answer: C



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169. Industrial melanism is an example of

- A. Neo Lamarckism
- B. Neo Darwinism
- C. Natural selection

D. Mutation

Answer: C



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170. Which is relatively most accurate method of dating of fossils ?

- A. Potassium -argon method
- B. Uranium-lead method
- C. Electron spin resonance method
- D. Radio carbon method

Answer: C



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171. Which of the following structures is homologous to the wing of the birds ?

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

Answer: C



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172. Following are the statements regarding the origin of life

- (A) The earliest organisms that appeared on the earth were non-green and presumably anaerobes
 - (B) The first autotrophic organisms were the chemoautotrophs that never released oxygen.
- Of the above statements which one of the following options is correct

A. (b) is correct but (a) is false

B. Both (a) and (b) are correct

C. Both (a) and (b) are false

D. (a) is correct but (b) is false

Answer: B



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173. Analogous structures are a result of

A. Convergent evolution

B. Shared ancestry

C. Stabilizing selection

D. divergent evolution

Answer: A



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174. Genetic drift operates in :

- A. small isolated population
- B. large isolated population
- C. non-reproductive population
- D. slow reproductive population

Answer: A



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175. 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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176. Which of the following is the correct sequence of events in the origin of life?

- I. Formation of protobionts
- II. Synthesis of organic monomers
- III. Synthesis of organic polymers
- IV. Formation of DNA-based genetic systems

A. I,II,III,IV

B. I,III,II,IV

C. II,III,I,IV

D. II,III,IV,I

Answer: C



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

A. Australopithecus → Ramapithecus → homo habilis → Homo erectus

B. Ramapithecus → Australopithecus → Homo habilis → Homo erectus

C. Ramapithecus → Homo habilis → Australopithecus → Homo erectus

D. Australopithecus → Homo habilis → Ramapithecus → Homo erectus`

Answer: B



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178. Artificial selection to obtain cows yielding higher milk output represents

- A. directional as it pushes the mean of the character in one direction
- B. disruptive as it splits the population into two, one yielding higher output and the other lower output
- C. stabilising followed by disruptive as it stabilises the population to produce higher yielding cows
- D. stabilising selection as it stabilises as it stabilises this character in the population

Answer: A



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179. Among the following sets of examples for divergent evolution, select the incorrect option

A. Forelimbs of man , bat and cheetah

B. Heart of bat, man and cheetah

C. Brain of bat, man and cheeth

D. Eye of octopus , bat and man

Answer: D



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180. According to Hugo de Vries, the mechanism of evolution is

A. multiple step mutations

B. saltation

C. phenotypic variations

D. minor mutations

Answer: B



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Practice Question Assertion Reason

1. Assertion: The earth originally had a reducing atmosphere.

Reason : There was no life on the earth when it came into existence

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

Answer: B



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2. Assertion : New life comes only from the preexisting life

Reason: Spontaneous generation of life under the present environmental conditions on earth is not possible

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

Answer: A



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3. Assertion: Life originated by chance coming together of necessary chemicals through a series of chemical reactions (abiogenesis).

Reason: Abiogenesis has not been experimentally proved

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

Answer: C



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4. Assertion : The first living organisms were heterotrophs.

Reason : They were surrounded by preformed organic molecules which they used as food

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

Answer: A



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5. Assertion:Life originated on land.

Reason:Conditions were not favourable for life in water

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

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

C. If Assertion is true but Reason is false.

D. If both Assertion and Reason are false

Answer: D

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6. Assertion: Coacervates are believed to be the precursors of life. It begt

Reason : Coacervates were self-duplicating aggregates of proteins surrounded by lipid molecules.

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

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

C. If Assertion is true but Reason is false.

D. If both Assertion and Reason are false

Answer: C



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7. Assertion: Analogous organs serve the same function and look alike, but have different structure and embryonic origin.

Reason: Analogous organs have no specific significance

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

Answer: C



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8. Assertion: Vestigial organs are greatly reduced and functionless

Reason: These organs were fully developed and functional in the ancestral forms, but are gradually disappearing due to change in the mode of life of their descendants .

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

Answer: A



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9. Assertion: Muscles of external ears are fully developed in humans

Reason: Ear muscles close the ears during excessive noise

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

Answer: D



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10. Assertion: Frog's tadpole has fish-like form, tail and gills

Reason: Tadpole stage is the recapitulation of the fish-like ancestor of frog in the latter's life history

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

Answer: A



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11. Assertion: Jurassic period is considered as the age of reptiles.

Reason: Reptiles dominated in all habitats during Jurassic period

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

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

C. If Assertion is true but Reason is false.

D. If both Assertion and Reason are false

Answer: A

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12. Assertion: Fossil organisms located in the superficial rocks are of more recent origin.

Reason: Fossils are the most convincing evidence of organic evolution.

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

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

C. If Assertion is true but Reason is false.

D. If both Assertion and Reason are false

Answer: B



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13. Assertion: The fossil bird named Archaeopteryx is regarded as missing link between reptiles and birds.

Reason: This bird had feathers, wings and beak like the birds and claws on fingers, teeth and long tail like the reptiles.

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

Answer: A



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14. Assertion: Enzymes are similar in composition and action in most animals.

Reason: Enzymes accelerate the biochemical reactions.

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

Answer: B



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15. Assertion:Some babies have a tail

Reason:This is just a freak of nature

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

Answer: C



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16. Assertion:Lamarck's theory of organic evolution states that use and disuse of organs and environment cause inheritable variations.

Reason: The modern theory of evolution is called Neo-Darwinism.

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

Answer: B



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17. Assertion:Darwin held that small favourable variations formed the raw material for evolution

Reason:Darwin did not go into the factors which produce variations.

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

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

C. If Assertion is true but Reason is false.

D. If both Assertion and Reason are false

Answer: B

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18. Assertion: A single mutation may produce a new species

Reason: Mutations cause variation in chromosomes and genes and are, therefore, inheritable .

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

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

C. If Assertion is true but Reason is false.

D. If both Assertion and Reason are false

Answer: A



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19. Assertion: Isolation checks inbreeding among the otherwise potential mates

Reason: This preserves variations which can lead to speciation (evolution)

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

Answer: A



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20. Assertion: Speciation is not likely to occur simply by changes in the genotype of a population.

Reason: Natural selection really means differential reproduction

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

Answer: B



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21. Assertion: Interspecific mating often produces a more vigorous but sterile F_1 hybrids.

Reason: Reproductive isolation does not let evolution occur.

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

Answer: C



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22. Assertion: Insecticides and antibiotics remain effective for an unlimited period

Reason:Organisms never lose sensitivity to insecticides and antibiotics

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

Answer: D



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23. Assertion:Basis of adaptation is the preexisting gene mutation

Reason:In changed environment , a hidden gene mutation may express and result in survival of the organisms and finally lead to adaptation to new conditions

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

Answer: A



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24. Assertion: The natural interspecific hybrids are lacking or are very rare.

Reason: Members of different species have some sort of reproductive isolation and generally do not interbreed

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

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

C. If Assertion is true but Reason is false.

D. If both Assertion and Reason are false

Answer: A

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25. Assertion: Evolution is not occurring at present .

Reason: Evolution takes a very long time to occur

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

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

C. If Assertion is true but Reason is false.

D. If both Assertion and Reason are false

Answer: D



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26. Assertion: Acquired characters are noninheritable

Reason: Acquired characters generally affect the somatic cells and it is the germ cells that are passed on to the next generation

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

Answer: A



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27. Assertion : Artificial selection is highly beneficial for humans .

Reason:Artificial selection is carried out by man

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

Answer: B



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28. Assertion:Fossil modern man (also called Cro-Magnon man) is thought to be the direct ancestor of the living man .

Reason: The two resemble in all essential features and the change involved the evolution of culture rather than that of morphology

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

Answer: A



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29. Assertion: Man mainly differs from the primates in his large brain and high intelligence .

Reason: Lumbar curve is lacking in humans but present in apes .

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

Answer: C



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30. Assertion:Human evolution occurred in Asia and Africa

Reason:The earliest fossils of the prehistoric man (Ramapithecus and Sivapithecus) have been found from the late Miocene of Shivalik hills in India

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

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

C. If Assertion is true but Reason is false.

D. If both Assertion and Reason are false

Answer: A

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31. Assertion: Human and great apes have a common ancestry.

Reason: Man and chimpanzee have similar banding pattern of chromosomes number 3 and 6

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

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

C. If Assertion is true but Reason is false.

D. If both Assertion and Reason are false

Answer: A



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32. Assertion: Man has descended from monkeys.

Reason: Monkeys resemble humans more than apes do

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

Answer: D



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33. Assertion (A) : The earliest organisms that appeared on the Earth were non-green and presumably anaerobis.

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

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

Answer: B



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34. Assertion: Reproductive isolation brings about sympatric speciation

Reason: It is the primary mode of speciation .e.g., Darwin's finches

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

Answer: B



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35. Assertion: Coacervates are believed to be the precursors of life. It begt

Reason : Coacervates were self-duplicating aggregates of proteins surrounded by lipid molecules.

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

Answer: D



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