

BIOLOGY

BOOKS - MBD

ECOLUTION

Example

1. Whay is life possible of the earth?



2. Who showed that life comes only from preexisting life?



3. Who disproved the theory of spontaneous generation?



4. What was the condition on the earth then?

5. Who proposed the theory of origin of life from abiotic chKHOicals?



6. Name the two scientists who set up a special experiment to prove Oparin's theory of origin of life.



7. What are fossils?



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8. Define exobiology.



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9. Define biogeography.



10. Give examples of analogy and homology in plants.



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11. What evolutionary phenomenon is illustrated by the different marsupials found in Australia?



12. What is significance of connecting links? **Watch Video Solution** 13. Name the scientist whose work influenced Darwin. **Watch Video Solution 14.** What is meant by saltation with reference to evolution?



15. What is founder effect?



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16. Discuss the importance of artifical selection in the derivation of the concept of natural selection



17. What is genetic drift?



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18. Name the primates that existed 15 million years ago.



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19. What was the difference between Drypithecus and Ramapithecus?



20. Where were fossils of human-like bones discovered?



21. Where were fossils of human-like bones discovered?



22. Write the scientific name of the first human like hominid.



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23. Write the scientific name of the first human like hominid.



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24. Define struggle for existence





25. Define fossil park. Give one example



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26. What are coenogenetic characters?



27. Try to trace the components of human evolution.



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28. List 10 modern-day animals and using the Internet resources link It to a corresponding ancient fossil. Name both.



29. Give one example of Adaptive Radiation.



30. Can we call human evolution as adaptive radiation?



31. Using internet and discussing with your teacher, trace the evolutionary stages of any

one animal say horse. **Watch Video Solution 32.** What are the characteristic of life forms that had been fossilised? **Watch Video Solution 33.** Did aquatic life forms got fossilized? If yes, where do we come across such fossils? **Watch Video Solution**

34. What are we refrerring to when we say "simpler organisms" or "complex organisma"?



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35. How do we compute the age of a living tree?



36. Give an example for convergent evolution and identify the features towards which they are converging.



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37. How do we compute the age of a fossil?



38. What is more important precondition for adaptive radiation?



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39. How do we compute the age of a fossil?



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40. When we talk of functional macromolecules e.g. protein as enzyme, hormones,

receptor, antibodies, etc, towards what are they evolving?



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41. In a certain population, the frequency of three genotypes is as follows:

Genotypes : BB Bb bb

frequency: 22% 62% 16%

what is the likely frequency of B and b alleles?



42. Among the five factors that are known of effect Hardy-Weinberg equilibrium, three factors are gene flow, genetic drift and genetic recombination. What are the other two factors?



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43. What is founder effect?



44. Who among the Dryopithecus and Ramapithecus was more man-like?



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45. By what Latin name, was the first homind known?



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46. Among Ramapithecus, Australopithecines and Homo habilis- who probably did not eat meat?



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47. Louis Pasteur's experiments, if you recall, proved that life can arise from only preexisting life. Can we correct this as life evolves from pre-existent life or otherwise we will never answer the question as to how the first forms of life arose? Comment.



48. The scientists believe that evolution is gradual. But extinction, part of evolutionary story, are 'sudden' and 'abrupt' and also group-specific. Comment whether a natural disaster can be the cause for extinction of species.



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



50. While creation and presence of variations is directionless, natural selection is directional as it is in the concept of adaptation . Explain.



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51. The evolutionary story of moths in England during industrialization reveals, that "evolution is apparently reversible". Clarify this statement.



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



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53. State and explain any three factors affecting allele frequency in populations.



54. Gene flow occurs through generations. Gene flow can occur across language barriers in humans. If we have a technique of measuring specific allele frequencies in different population of the world, can we not predict human migratory patterns in prehistory and history? Do you agree or disagree? Provide explanation to your answer.



55. How do you express the meaning of words like race, breed, cultivars or variety?



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56. Enumerate three characteristic criteria for designating a Mendelian population.



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



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58. Name the law that states that the sum of allelic frequencies in a population remains constant. What are the five factors that influence these values?



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



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60. You have studied the story of Pepper moths in England. Had the industries been removed, what impact would it have on the moth population? Discuss.



61. Discuss key concept of evolution theory of Darwin.



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62. Two organism occupying a particular goegraphical area(say desert) show similar adaptive strategies. Taking examples, describe the phenomenon.



63. We are told that evolution is a continuing phenomenon for all living things. Are humans also evolving? Justify your answer.



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64. Had Darwin been aware of Mendel's work would he been able to explain the origin of variations. Discuss.



65. Which of the following is used as an atmospheric pollution indicator?

- A. Lepidoptera
- B. lichens
- C. Lycopersicon
- D. Lycopodium

Answer:



66. The theory of spontaneous generation stated that:

A. life arose from living forms only

B. life can arise from both living and nonliving

C. life can arise from non-living things only

D. Life arises spontaneously, neither form

living nor from the non-living

Answer:

67. Animal husbandry and plant breeding programmes are the examples of:

A. (a) reverse evolution

B. (b) artificial selection

C. (c) mutation

D. (d) natural selection

Answer:



68. Palaeontological evidences for evolution refer to the

A. development of embryo

B. homologous organs

C. fossils

D. analogous organs

Answer:



69. The bones of forelimbs of whoale, bat, cheetah and man are similar in structure, because:

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

Answer:



70. Analogous organs arise due to:

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

Answer:



71. $(p+q)^2=p^2+2pq+q^2=1$ represents an equation sed in:

A. Population genetics

B. Mendelian genetics

C. biometrics

D. molecular genetics

Answer:



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

- A. Population genetics
- B. transduction genetics
- C. pre-existing variation in the population
- D. diversity evolution

Answer:



73. Evolution of	ilife shows	that life	forms	had	6
trend of moving	g from:				

- A. land of water
- B. dry land to wet land
- C. fresh water to sea water
- D. water to land

Answer:



74. Viviparity is considered to be more evolved because:

A. the young ones are left on their own

B. the young ones are protected by a thick shell

C. the young ones are protected inside the mother's body are looked after they are born leading to more chances of survival

D. the embryo takes a long times to develop

Answer:



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75. Fossils are generally found in:

- A. Sedimentary rocks
- B. Igneous rocks
- C. Metamorphic rocks

D. Any type of rock

Answer:



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76. 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. 0.42

- B. 0.49
- C. 0.09
- D. 0.58

Answer:



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77. Which type of selection is industrial melanism observed in moth Biston bitularia:

A. Stabilising

B. Directional C. Disruptive D. Artifical **Answer: Watch Video Solution**

78. Whay is life possible of the earth?



79. Give another name for origin of life.



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80. Who showed that life comes only from pre-existing life?



81. Which gas was absent in the atmosphere of primitive earth?



82. What product was formed in the Miller's experiment in the direction of origin of life on earth?



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83. Consider a thorn in Bougainvillea and a tendril in cucurbita. Are these two organs homologous or analogous? Give reason.



84. What must be present in any population before selection, either artifical or natural that can bring about changes?



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85. Which one of the living apes diverged first from the main line of homind evolution and which one diverged last?



86. According to de- Vries what is saltation?

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87. Why are theories of special creation and spontaneous generation not accepted?



88. Briefly explain theory of Biogenesis.



89. How were galaxies formed?



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90. How many galaxies are present in the universe? Do all the stars that we can see with naked eye belong to our galaxy? Does earth is a part of solar system?



91. Differences between primitive atmostphere and present day atmosphere



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92. State the role of sun in the origin of life.



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93. What was experimental model of S.W. fox



94. What are Coacervates?



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95. List characteristics of coacervates.



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96. Differentiate coacervate droplets and protenoid microsphere.





97. Briefly describe formation of first living cell.



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98. Write the contribution of urey and miller



99. Differentiate chemical evolution and organic evolution.



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100. Which are primitive heterotrophs or autotrophs? Give reasons.



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101. What is evolution?



102. What are homologous organs? Give examples



103. What are analogous organs? Give examples



104. What are vestigial organs? Give two examples of vestigial organs in a human body.



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105. Write significance of vestigial organs.



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106. Define atavism. Give two examples of



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107. Define connecting link (in regard to evolution) and give its one example from vertebrates.



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108. Give an example of Connecting Link



109. What is significance of connecting links?

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110. How does taxonomy support the evolution?



111. What are fossils?



112. What is the physical method of determining the age of fossils?



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113. Differentiate fossil and living fossil.



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114. Point out reptilian and avian features of Archaeopteryx.

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



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116. Why is Archaeopteryx called a connecting link between reptiles and birds?



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117. Differentiate between connecting links and missing links.



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



119. "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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120. Give any two striking similarities in the sequence fo embryonic development of all vertebrates.



121. What are Dryopithecines? Why are these considered to be common ancestors of both apes and human?



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122. How do temporary embryonic structures support evolution?



123. What is mass extinction?			
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124. What are the factors for mass extinction?			
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125. What is plate tectonics?			
Watch Video Solution			

126. What is continental drift? What is its significance?



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127. What evolutionary phenomenon is illustrated by the different marsupials found in Australia?



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128. What do you mean by Neo-Lamarckism?



129. Distinguish between Lamarck Theory and Darwin Theory.



130. Describe De-Vries mutation theory of evolution.



131. List the main drawbacks of De Vries theory of mutation.



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132. What is the main difference between Darwin's theory of natural selection and De Vries mutation theory?



133. Where did Drawin error in his theory of the "Origin of Species" through natural selection?



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134. What is new about Neo-Darwinism?



135. Why is the frequency of sickle cell anaemia more in the malaria prone areas?



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136. What are the differences between Darwinism and Neo-Darwinism?



137. What is artifical selection? How man has employed to obtain new varieties of plants and animals?



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138. How is artifical selection different from natural selection?



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



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140. Discuss the role of variations in evolution.



141. With the help of an algebraic equation, how did Hardty-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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142. Select the homologous structures from the combinations given below:

A. fore limbs of whale and bats

- B. tuber of potato and sweet potato
- C. eyes of Octopus and mammals
- D. Thron of Bougainvillea and Tendrail of cucitbits.

Answer:



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



144. Name 3 types of gene mutation?



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



146. Explain giving reasons the existence of placental wolf and Tasmanian wolf sharing the same habitat.



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147. Fitness is the end result of the ability to adapt and get selected by Nature. Explain with suitable example.



148. "A population has been exhibiting genetic equilibrium?

Answer the following with regard to the above statement

Explain the above statement.



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149. "A population has been exhibiting genetic equilibrium?

Answer the following with regard to the above

statement

Name the underlining principle.



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150. "A population has been exhibiting genetic equilibrium?

Answer the following with regard to the above statement

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



151. "A population has been exhibiting genetic equilibrium?

Answer the following with regard to the above statement

Take up any one such factor and explain the gene pool will change due to that factor.



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152. List two evidences of mutation theory of evolution?



153. List one evidence in support of and one evidence against Darwinism



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154. Define phylogeny?



155. 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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156. What is "protobiont"? Name the various type s of protobionts conceived by different scientists. Mention their characteristics and drawbacks



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157. Summarise miller's simulation experiment for organic sythesis.



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158. Explain convergent evolution. Illustrate with the help of example.



159. Show the evolution of plants by hypothetical sketch.



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160. Distinguish between microevolution and macroevolution narrate the singnificance of popuation genetics in evolution.



161. Define genetic drift. How does it produce founder effect and genetic bootleneck?



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162. What is natural selection in modern terms? Elucidate the three different effects of natural selection on variation.



Gene flow



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164. What is industrial melanism?



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165. Define the following

Allopatric speciation



Sympatric speciation



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167. Define the following

Balancing selection



Hybrid sterility



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169. Define the following

Biological species concept



Evolutionary species concept.



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171. What is biogeography? How Darwin succeded to use the evidence from biogeography in favour of evolution?



172. What do you understand by the term recombination?



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173. Write note

Name the three kinds of selection. Show the three kinds with the help of figure



174. What is culture? What types of evidence suggest that Homo erectus had a culture?



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175. In what respect did the culture of Neanderthal man represent advancement over Homo erectus?



176. Arrange the following substances in a proper sequence with regard to the formation of chemical constituents at the time of origin of life: Sugar, methane, nucleic acid and amino acid.



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177. Starting with the oldest form rearrange the following genera species according to their sequence of appearance on earth:

Home erectus, Homo sapiens , Ramapithecus, Homo habilis, Australopithecus.



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178. 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).



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



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180. Gene flow occurs through generations. Gene flow can occur across language barriers in humans. If we have a technique of measuring specific allele frequencies in

different population of the world, can we not predict human migratory patterns in prehistory and history? Do you agree or disagree? Provide explanation to your answer.



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Exercise

1. How do we compute age of a rock?



2. Define artificial selection? Name one example from plants and animals produced by this process?



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

The p[rimitive earth conditions created

include:

hight temperature, volcanic storms, nonreducing atmosphere



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

The primitive earth conditions created include:

- A. low temperature, valcanic storms, atmosphere rich in oxygen
- B. low temperature, valcanic storms, reducing atmosphere
- C. high temperature, valcanic storms, nonreducing atmosphere
- D. high temperature, volcanic storms, reducting atmosphere contraning $CH_4,\,NH_3,\,$ etc.

Answer:



5. Variations during mutations of meiotic recombinations are:

random and directionless



6. Variations during mutations of meiotic recombinations are



7. Variations during mutations of meiotic recombinations are



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8. Variations during mutations of meiotic recombinations are



9. What are the characteristic of life forms that had been fossilised?



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10. How do we compute the age of a rock?



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



12. Explain antibiotic resistance abserved in bacteria in light of Darwin's Natural selectionTheory.



13. what are connecting links? Give two examples.



14. Differentiate ape and man.



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15. Briefly explain Oparin-Haldane theory of origin of life.



16. What are fossils? Discuss the implication of fossils in evolution.



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17. What is divergent evolution? Give example.



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18. State and explain any three factors affecting allele frequency in populations.



19. Give a brief account of present day concept of evolution



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20. The most accepted line of descent in human evolution is:

A. Australopithecus-->Ramapithecus

>Home sapiens -->homo habilis

- B. Home erectus -->Homo habilis -->Homo sapiens
- C. Ramapithecus -->Homo habilis -->Homo erectus -->Homo sapiens
- D. Australopithecus -->Ramapithecus -->
 >Homo erectus -->Homo habitis -->Homo
 sapiens

Answer:



21.	Which	of the	following	is	an	example	for
connecting link species?							

- A. Lobe fish
- B. Dodo bird
- C. Sea weed
- D. Tyrannosaurus rex.

Answer:



22. According to oparin which of the following was not present in primitive atmosphere of earth

- A. Hydrogen
- B. water vapour
- C. Methane
- D. Oxygen

Answer:



23. How many genotypes and phenotypes are present in ABO blood group system?



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24. Write the dual purpose served by Deoxyribonucleoside triphosphates in polymerisation.



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25. State Charles' law.



26. Mention the brain capacities of:

Homo habilis



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27. Mention the brain capacities of:

Neanderthal man.



28. If the sequence of nucleotides on one strand of DNA is 5' ATGCATGTCCAG rarr 3', Write the sequence of nucleotides in the complimentary strand in the 3' rarr 5', direction.



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29. Explain the mechanism of sex determination in birds. How does it differ from that of human beings?



30. when and where did Australopithecus live? Mention their characteristic features.



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31. Why both the strands of DNA do not act as template for RNA synthesis?



32. Bring out the differences between De Vries mutations and Darwinian variations.



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33. What are fossils? Discuss the implication of fossils in evolution.



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34. Explain the role of adaptor tRNA.



35. Describe adaptive radiation.



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36. What is splicing? Why it is necessary in eukaryotic genes?



37. Why is DNA molecule more stable genetic material than RNA? Explain.



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38. Differentiate between homologous and analogous organs



39. A tRNA is charged with amino acid and methionine:

A. At what end of tRNA is the amino acid attached?

B. What is the mRNA codon for this amino

C. Name the enzyme responsible for this binding.

D. What is the anticodon on this tRNA molecules?

Answer:



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40. Define male heterogamy. Give an example of organism showing female heterogamy.



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41. Peripatus is a connecting link between?

A. Annelids and molluscs

- B. Annelids and helminthes
- C. Annelids and arthropods
- D. Reptiles and mammals

Answer:



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42. List any four major goals of Human Genome project.



43. Describe Lamarack's theory of evolution, with a suitable example.



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44. What is a test cross? Show a monohybrid test cross using a Punnet square and give the phenotypic ratio.



45. Two Antirrhinum plants, one with red flowers and the other with white flowers were crossed. Show the possible genotypes and phenotypes of the progeny of F_1 and F_2 generations using the Punnette square. Explain the pattern of inheritance.



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46. Describe the mechanism of patter of inheritance of ABO blood groups in human.



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47. Human blood groups are genetically inherited. In a family A,B, AB, O blood groups are present. How is it possible to have such type of blood groups?

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Explain the phenomenon.

48. Human blood groups are genetically inherited. In a family A,B, AB, O blood groups

are present. How is it possible to have such type of blood groups?

Explain the phenomenon.



49. Among the five factors that are known of effect Hardy-Weinberg equilibrium, three factors are gene flow, genetic drift and genetic recombination. What are the other two factors?



50. Describve the three different methods in which natural selection can produce the change in the allele frequencies of a population.



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51. Name the common ancestor of ferns, horsetails and gymnosperms.



52. What is an operon? Describe the components of Lac operon in E. coil and mention how it switches on and off in the presence and absence of lactose respectively?



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53. ExplainHershey and Chase experiment to prove that DNA is the hereditary material in certain bacteriophage.



54. Write the scientific name of the organism that Morgan used for his experiments.



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55. Mention any four characteristic symptoms of the Down's syndrone affected child. What is the genetic basis of this disorder?



56. Explain in brief about the procedure of DNA fingerprinting.

