



BIOLOGY

BOOKS - MBD NCERT SOLUTIONS

HEREDITY AND EVOLUTION

Multiple Choice Questions

1. The unit of heredity is:

A. chromosome

B. DNA and RNA molecules

C. nucleus

D. gene

Answer: D



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2. Mendel worked on :

A. Edible pea

B. Wild pea

C. Garden pea

D. None of these

Answer: C



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3. An organism with two unlike genes of a trait is called :

A. Homozygous

B. Heterozygous

C. Hemizygous

D. None of these.

Answer: B



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4. An offspring of two homozygous parents differing from one another by alleles at only one gene locus is known as :-

A. back cross

B. monohybrid

C. dihybrid

D. trihybrid

Answer: B



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5. F_1 hybrid contains

A. two different genes of contrasting pair
of characters

B. single gene of only one character

C. two genes of same character

D. single gene for all characters.

Answer: A



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6. In a monohybrid cross, we get a genotypic ratio of :

A. 1 : 2 : 1

B. 2: 1: 2

C. 0: 1: 0

D. 2: 1: 1

Answer: A



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7. Mendel's law of independent assortment is based on F_2 ratio of

A. 1: 2: 1

B. 9:3:3:1

C. 2:1

D. 3:1

Answer: B



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8. The sex of child depends upon chromosome present in :

A. Egg of female

B. Sperm of male

C. Both (A) and (B)

D. None of these

Answer: C



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9. The theory of evolution indicates that

A. man evolved from monkeys

B. monkeys evolved from man

C. man evolved from dinosaur

D. man and apes had a common ancestor.

Answer: D



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10. The process of evolution :

A. is a continuous process

B. is a discontinuous process

C. was continuous in the beginning but discontinuous now

D. was discontinuous in the beginning but continuous now.

Answer: A



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11. Homologous organs are :

A. Dissimilar origin and dissimilar structure

B. Dissimilar origin but similar function

C. Similar origin with similar or dissimilar
function

D. Similar origin with dissimilar function.

Answer: C



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12. The wings of bat and birds are :

A. Homologous but not analogous

B. Neither homologous nor analogous

C. Analogous but not homologous

D. Vestigial.

Answer: A



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13. Which one of the following sets of structure includes only analogous organs

A. Hind legs of horse, grass hopper and bat

B. Hands of man, monkey and kangaroo

C. Mandibles of cockroach, mosquito and
honeybee

D. Wings of butterfly, housefly and bat.

Answer: D



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14. Study of fossils comes under :

A. Organic evolution

B. Palaeogeography

C. Palaeontology

D. Herpetology

Answer: C



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15. Darwin is associated with

A. Natural selection

B. Mutation

C. Inorganic evolution

D. All the above.

Answer: A



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Very Short Answer Type Questions

1. Name the following :

(i) Transfer of parental characters to their offsprings.

(ii) Science that deals with the study of inheritance.

(iii) Father of Genetics.

(iv) Functional unit of hereditary material.

(v) Alternative forms of same gene.

(vi) Carriers of genes.



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2. What are the units of heredity ?



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3. How many chromosomes are present in human cells ?



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4. What is the modern term given to the factor of Mendel ?



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5. Give the name of the person and his experimental specimen who carried out the qualitative inheritance for the first time.



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6. What is locus ?



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7. Define a gene (give any one definition.)



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8. What other names were available for gene at the time of Mendel's era ?



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9. Give any one character of gene.



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10. Expand DNA.



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11. What is Mendel's monohybrid ratio ?



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12. Write down Mendal's dihybride ratio for phenotypes.



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13. Write the genotype of man with blood group 'A'



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14. What is gene according to molecule structure ?



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15. What are the two major functions of DNA ?



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16. What are the causes of inbuilt tendency of variations ?



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17. Can changes in non-reproductive tissue pass on to next generation ?



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18. What is meant by the term extinction ?



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19. Where will you find the most ancient and recent fossil ?



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20. What is microevolution ?



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21. Define macroevolution.



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



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



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24. Name any fossil animal which serves as connecting link. Which two groups does it connect ?



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25. What was the common character on which races of human populations were determined.



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26. Name any four sexually transmitted diseases.



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Short Answer Type Questions

1. What is meant by heredity ?



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2. What is genetics ?



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3. What is the importance of variations ?



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4. Write three basic features of inheritance.



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5. Mention the information source of making protein in the cell. What is the basic event in reproduction.



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6. Why did Mendel choose garden pea for his experiments ?



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7. What is monohybrid cross ?



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8. Compare a monohybrid cross and a reciprocal cross.



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9. What is gene ? What is nature of gene ?



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10. Where are genes located ? What is the chemical nature of gene ?



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11. What are homologous organs ? Give examples.



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12. What are analogous organs ? Give examples.



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13. Differentiate between Homologous organs and analogous organs



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14. Are the fossils being formed at present time ?



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



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16. As per Mendel's law, describe the independent assortment of two separate traits (round and green seeds) with (wrinkled and yellow seeds) along with diagram.



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17. Rounded seeds (dominant trait) were crossed with wrinkled seeds (recessive trait).

(i) What type of seeds will be produced in F_1 generation ?

(ii) By self pollination F_1 seeds, what percentage of seeds will be rounded shape in F_2 generation ? Explain with diagram.



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18. What are different ways in which individual with a particular trait may increase in

population ?



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19. A blue coloured flowering plant (BB) was crossed with white coloured flowering plant (bb).

(i) What will be the colour of flowers in F_1 generations ? (ii) What percentage of white flowered plants will be in F_2 generation through self-pollination of F_1 plants. Explain with diagram.



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Long Answer Type Questions

1. How is sex determined in human beings?



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2. How human evolution take place over the years ?



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Example

1. If a trait exists in 10 % of population of an asexually reproducing species and a trait B exist in 60 % of the same population, which trait is likely to have arisen earlier?



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2. How does the creation of variations in a species promote survival?



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3. How do Mendel's experiments show that a gene may be dominant or recessive?



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4. How do Mendel's experiments prove that traits are inherited independently?



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5. A man with blood group A marries a woman with blood group O and their daughter has blood group O. Is this information enough to tell you which of the traits – blood group A or O – is dominant? Why or why not?



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6. How is the sex of child determined in human beings?



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7. What are different ways in which individual with a particular trait may increase in population ?



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8. Why are traits acquired during the life-time of an individual not inherited?



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9. Why are the small number of surviving tigers is a cause of worry from the point of view of genetics?



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10. What factors could lead to the rise of new species?



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11. Will geographical isolation be a major factor in the speciation of a self-pollinating plant species? Why or why not?



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12. Will geographical isolation be a major factor in the speciation of an organism that reproduces asexually? Why or why not?



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13. Give an example of characteristic being used to determine how close two species are in evolutionary terms?



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14. Can the wing of butterfly and wing of a bat be considered homologous organs? Why or why not



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15. What are fossils? What do they tell us about the process of evolution



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16. Why are human beings which look so different from each other in terms of size. Colour and looks are said to be belonging to the same species?



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17. In evolutionary terms can we say that which among bacteria, spider, fish and chimpanzee have a better body design? Why or why not?



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18. A Mendelian experiment consisted of breeding tall pea plants bearing violet flowers with short pea plants bearing white flowers. The progeny all bore violet flowers, but almost half of them were short. This suggests that

the genetic make-up of the tall parent can be depicted as

A. TTWW

B. TTww

C. TtWW

D. TtWw

Answer:



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19. An example of homologous organs is

- A. our arm and a dog's fore-leg
- B. our teeth and an elephant's tusks
- C. potato and runners of grass
- D. all of the above

Answer:



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20. A study found that children with light-coloured eyes are likely to have parents with light-coloured eyes. On this basis, can we say anything about whether the light eye colour trait is dominant or recessive? Why or why not?



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21. In evolutionary terms, we have more in common with

A. a chinese school-boy

B. a chimpanzee

C. a spider

D. a bacterium

Answer:



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22. How are the areas of study of evolution and classification interlinked?



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23. Explain the terms homologous and analogous organs with example



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24. Outline a project which aims to find the dominant coat colour in dogs.



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25. Explain the importance of fossils in deciding evolutionary relationship



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26. What evidence do we have for the origin of life from inanimate matter?



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27. Explain how sexual reproduction gives rise to more viable variation than asexual reproduction how does this affect the evolution of those organisms that reproduce sexually?



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28. How is the equal genetic contribution of male and female parents ensured in the progeny?





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29. Only variations that confer an advantage to an individual organism will survive in a population. Do you agree with this statement? Why or why not?



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30. Describe briefly mendel's experiment.



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31. Describe present day concept of evolution.



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32. Why is mendel known as father of genetics?



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33. Write contribution of mendel



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34. Explain monohybrid cross



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35. Enunciate mendel's of segregation with the help of a monohybrid cross.



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36. Explain the law of independent assortment.



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37. 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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38. Summarise miller's simulation experiment for organic synthesis.





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39. How human evolution take place over the years?



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40. What is meant by heredity ?



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41. What is genetics ?



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42. What are the causes of variations in clones?



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43. Explain the term variation?



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44. What do you mean by discontinuous variation?



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45. What is the importance of variations ?



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46. Mention the information source of making protein in the cell. What is the basic event in reproduction.



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47. Why did Mendel choose garden pea for his experiments ?



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48. Make a table showing characters of pea selected by Mendel.



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49. State and explain principle of dominance?



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50. What is a dihybrid cross?



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51. In man four types of blood groups a,b,ab and o are controlled by three alleles of a gene.What is the machanism of inheritance of the blood groups?



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52. Define genetic engineering. Write applications of genetic engineering



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53. Give a graphic representation of mechanism of gene expression



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54. What do you understand by origin of life?

Explain



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55. Write the contribution of urey and miller



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56. Are the fossils being formed at present time?



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



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58. Discuss the importance of artificial selection in the derivation of the concept of natural selection



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59. Distinguish between microevolution and macroevolution narrate the significance of population genetics in evolution.





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60. Define variations in relation to species why is variation beneficial to the species?



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61. Explain genetic drift.



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62. What is reproductive isolation?



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



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64. How does the creation of variations in a species ensure survival?



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65. How are new organisms formed?



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66. Do you find more variation amongst human or in sugarcane fields



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67. What do the progeny get from parents?



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68. What special features you find in second generation?



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69. Organisms reproducing by asexual reproduction show a few variation.



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70. What are functional unit of hereditary material?



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71. Coin the term for transfer of characters from parent to offspring



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72. Who is the father of genetics?



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73. Mendel worked on which plant having alternate traits?



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74. Mention any two of the seven contrasting traits of garden pea selected by Mendel





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75. What is recessive?



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76. What is dominance?



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77. Information for synthesis of proteins is stored in which part of cell



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78. What is gene for protien?



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79. Name the structure or mole-cules which control the traits



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80. Name the carriers of genes



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81. What is gene according to molecular structure?



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82. Name the alternative form of gene



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83. How many pairs of chromosomes are present in male/female human?



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84. Write sex-chromosome of fKHOale



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85. Write sex-chromosome of male



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86. Which chromosome determine the sex of child



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87. If in vegetation of green plants, what will happen if green beetles are not distinguished as compared to red beetles.



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88. What is the basis of evolution?



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89. What is the effect of starvation on DNA in beetles?



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90. What are the causes of inbuilt tendency of variations?



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91. Why crows could not eat coloured beetles?



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92. what is meant by the term extinction?



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93. What is the basis of darwin's theory of evolution?



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94. Who proposed the theory of origin of life from abiotic chemicals?



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95. Name the scientist who conducted experiments to prove abiotic origin of life?



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



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97. Define macroevolution



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98. Genetic drift occur in small or large population



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99. What is the structural unit of life?



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100. Name a cell without nucleus



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101. What is fossil?



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102. The species sharing more common characteristics will be close or distant related ?



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



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



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105. Name any fossil animal which serves as connecting link. Which two groups does it connect ?



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106. What are factors of mendel?





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107. What is the modern term given to the factor of Mendel ?



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108. Coin one word for a class of individuals which are morphologically similar



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109. Coin the term for the character which does not allow the expression of contrasting character in a hybrid?



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110. Coin the term for individual which breed true for its character.



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111. What are inherited traits?



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112. What is mendel's monohybrid ratio?



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113. Write down mendel's monohybrid ratio for phenotypes



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114. Write the genotype of man with blood group 'A'



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115. What are the two major functions of DNA ?



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116. Define speciation.



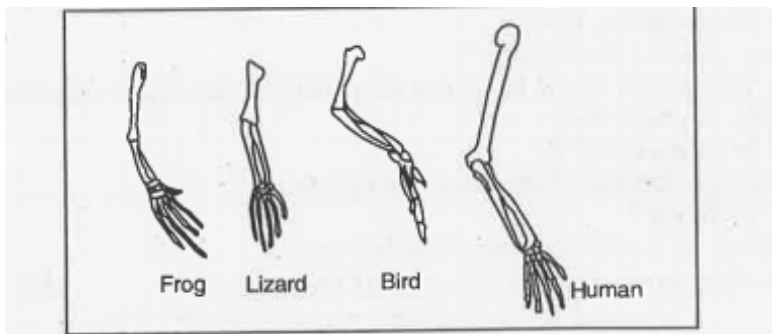
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117. What is paleontology?



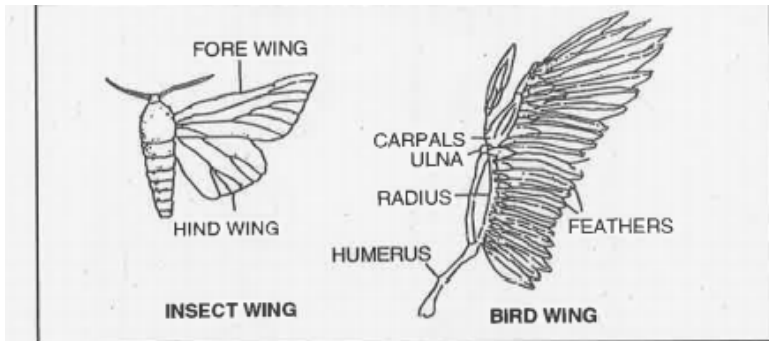
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118. What are the kinds of organs shown in the figure?



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119. What are kinds of organ shown in figure?



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120. Write the blood group of progeny P and

Q.

	I^A	I^O
I^A	$I^A I^A$	$I^O I^A$
I^O	(P)	(Q)



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121. What are vestigial organs ?



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122. Enlist any four vestigial organs in human beings.



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123. State biogenetic law



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124. Name the gases used by urey and miller for their experiment



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125. What does biogenesis mean?



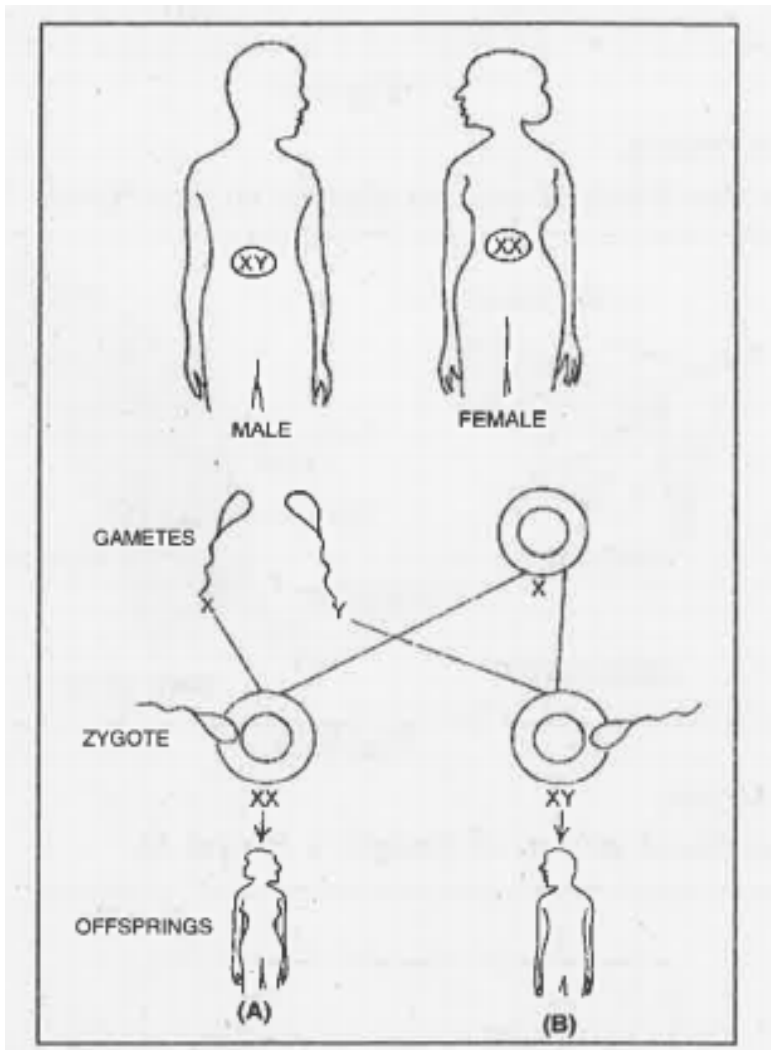
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126. What is locus ?



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127. In the diagram what is the sex of (a) and (b)



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128. Branch of biology dealing with heredity and variation is

A. Plaentology

B. evolution

C. genetics

D. ecology

Answer:



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129. The factors which represent the contrasting pairs of characters are called

- A. dominant
- B. recessive
- C. determinants
- D. alleles

Answer:



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130. Two allelic genes are located on .

- A. The same chromosome
- B. two homologous chromosomes
- C. Two non-homologous chromosomes
- D. any two chromosomes

Answer:



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131. Mendel's law of segregation is based on separation of alleles during

- A. gamete formation
- B. seed formation
- C. pollination
- D. KHObryonic development

Answer:



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132. The ratio of phenotype in F_2 generation of a dihybrid cross is:

A. 3:1

B. 1:2:1

C. 2:1

D. 9:3:3:1

Answer:



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133. The composition male sex chromosomes are present in male and female?

A. XX

B. YYX

C. YXY

D. XY

Answer:



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134. Who postulated the natural selection as the basis of evolution?

A. darwin

B. haldane

C. lamark

D. newton

Answer:



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135. How many pairs of chromosomes are present in male and female?

A. 33

B. 43

C. 23

D. 46

Answer:



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136. How many years back human has started to grow the wild cabbage as food?

A. 20

B. 200

C. 2000

D. 20000

Answer:



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137. How the age of fossils is determined

A. fossil dating

B. DNA

C. gene

D. biological evolution

Answer:



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138. Fill in the blanks:are units of heredity



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139. Fill in the blanks: There are.....pairs of chromosomes in human.



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140. Fill in the blanks: Site of gene on a chromosome is called..... .



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141. Fill in the blanks: Continuity of life is maintained through.....and..... .



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142. Fill in the blanks: Mendel formulated law of purity of gametes on the basis of.... .



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143. Fill in the blanks: The composition of female sex-chromosomes is.... .



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144. Fill in the blanks: Wing of butterfly and wing of birds are examples of..... organs



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