



BIOLOGY

BOOKS - KUMAR PRAKASHAN

HEREDITY AND EVOLUTION

Questions And Answers

1. How does reproduction link to variation ?



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2. Explain creation of diversity over succeeding generation.

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

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



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5. Which is the most obvious outcome of reproduction ?

What does the rules of heredity determine ?



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6. What is the meaning of similarities and differences ?



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7. To suggest rule for inheritance of earlobe type.

Procedure /Method :

→ The lowest part of the ear pinna called the earlobe, is

closely attached to the side of the head, i.e., attached or not, i.e., free.

→ Observe the earlobes of all the students in the class.

Prepare a list of students. Enter the data about the earlobes whether they are free or attached.

→ Find out about the earlobes of the parents of each student in the class.

→ Correlate earlobe type of each student with that of their parents.

→ In the column write F for free earlobe and A for attached earlobe.



Trait of earlobe]

No.	Details	Free Earlobe	Attached Earlobe
1.	Name of student		
	Mother		
	Father		
2.	Name of student		
	Mother		
	Father		

Answer the following questions on the basis of the collected data:

Which expression of earlobe is observed more in number in your class?



8. To suggest rule for inheritance of earlobe type.

Procedure /Method :

→ The lowest part of the ear pinna called the earlobe, is closely attached to the side of the head, i.e., attached or not, i.e., free.

→ Observe the earlobes of all the students in the class.

Prepare a list of students. Enter the data about the earlobes whether they are free or attached.

→ Find out about the earlobes of the parents of each student in the class.

→ Correlate earlobe type of each student with that of their parents.

→ In the column write F for free earlobe and A for

attached earlobe.



Trait of earlobe]

No.	Details	Free Earlobe	Attached Earlobe
1.	Name of student		
	Mother		
	Father		
2.	Name of student		
	Mother		
	Father		

Answer the following questions on the basis of the collected data:

Are the types of earlobes hereditary?



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9. To suggest rule for inheritance of earlobe type.

Procedure /Method :

→ The lowest part of the ear pinna called the earlobe, is closely attached to the side of the head, i.e., attached or not, i.e., free.

→ Observe the earlobes of all the students in the class. Prepare a list of students. Enter the data about the earlobes whether they are free or attached.

→ Find out about the earlobes of the parents of each student in the class.

→ Correlate earlobe type of each student with that of their parents.

→ In the column write F for free earlobe and A for

attached earlobe.



Trait of earlobe

No.	Details	Free Earlobe	Attached Earlobe
1.	Name of student		
	Mother		
	Father		
2.	Name of student		
	Mother		
	Father		

Answer the following questions on the basis of the collected data:

From your collected data state which expression is dominant and which one is recessive for earlobe.



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10. To suggest rule for inheritance of earlobe type.

Procedure /Method :

→ The lowest part of the ear pinna called the earlobe, is closely attached to the side of the head, i.e., attached or not, i.e., free.

→ Observe the earlobes of all the students in the class.

Prepare a list of students. Enter the data about the earlobes whether they are free or attached.

→ Find out about the earlobes of the parents of each student in the class.

→ Correlate earlobe type of each student with that of their parents.

→ In the column write F for free earlobe and A for attached earlobe.



Trait of earlobe]

No.	Details	Free Earlobe	Attached Earlobe
1.	Name of student ...		
	Mother		
	Father		
2.	Name of student ...		
	Mother		
	Father		

Answer the following questions on the basis of the collected data:

Determine the percentage of free earlobe and attached earlobe in the students of your classroom.

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11. State the basic features of inheritance of traits.

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12. Why there are two versions for each trait in each child ? What trait will be seen in the child from these two versions ?

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13. The gene 'T' for the character of tallness in pea plant is dominant and gene 't' is recessive. Explain it on the basis of Mendel's experiment.

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14. Explain the inheritance of any one character in two successive generations.

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15. When pea plants showing pair of two different characteristics are bred with each other.

Characters	Different characteristics
1. Height of Plant	Tall and short
2. Shape of seed	Round and wrinkled

Answer the following questions :

What do the progeny of cross made between tall plant with round seeds and a short plant with wrinkled seeds look-like ?



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16. When pea plants showing pair of two different characteristics are bred with each other.

Characters	Different characteristics
------------	---------------------------

1. Height of Plant	Tall and short
--------------------	----------------

2. Shape of seed	Round and wrinkled
------------------	--------------------

Answer the following questions :

Which traits are dominant ?



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17. When pea plants showing pair of two different characteristics are bred with each other.

Characters	Different characteristics
------------	---------------------------

1. Height of Plant	Tall and short
--------------------	----------------

2. Shape of seed	Round and wrinkled
------------------	--------------------

Answer the following questions :

What happens when F_1 progeny are used to generate F_2 progeny by self-pollination ?



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18. Explain the inheritance of shape and colour of the seed of pea plant (*Pisum sativum*).



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19. Explain the independent inheritance of two separate characters in pea plant on the basis of Mendel's experiment.

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20. How do proteins control the characteristics ? Explain with suitable example.

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21. How are traits controlled by genes ?

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22. Which mechanism of inheritance is used by all sexually reproducing organisms ?

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23. How does the mechanism of heredity work ?

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24. What is sex determination? State the different methods of sex determination in animals.

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25. Describe sex determination in the human beings.



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26. How do Mendel's experiments show that traits may be dominant or recessive ?



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27. How do Mendel's experiments show that traits are inherited independently ?



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28. 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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29. Describe sex determination in the human beings.



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30. What is responsible for inbuilt tendency to variation ?



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31. Explain natural selection with suitable example.

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32. Natural selection is directing evolution in the beetle population. Explain in detail.

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33. What is genetic drift ? How genetic drift provides diversity without any adaptation ?

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34. Explain the idea of evolution with the help of inherited variations in a beetle population.

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35. Explain how availability of food leads to variation in beetle population ? Is it inherited or not ? Why?

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36. Write short note on :

Acquired characteristics/traits

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37. Write short note on :

Hereditary characteristics



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38. Explain the process of origin of life as given by different scientists.



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39. What are the different ways in which individuals with a particular trait may increase in a population ?



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

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41. Why are the small numbers of cause of worry from the surviving tigers a point of view of genetics ?

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42. What is speciation ? Explain how speciation occurs.

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43. Explain the mechanism of speciation.

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

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

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

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47. Explain classification of organisms on the basis of Evolution.

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48. We can built up the evolutionary relationships of species by identifying hierarchies of characteristics between them. Explain.



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49. In what way homologous organs provide evidence for evolution ?



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50. Explain the importance of homologous organs in the process of evolution.



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51. Write short note : Analogous organs



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52. What are fossils ? How do they form ? Give example of various kind of fossils ? How do we know how old the fossils are ?

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53. How do fossils form layer by layer ?

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54. Explain evolution by stages through the example of eye.

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55. Write a short note on: Evolution of eye

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56. Write a short note on : Evolution of feathers

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57. Explain evolution from wild cabbage using the artificial selection.

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58. How and which different varieties of cabbage are developed from the wild variety of cabbage by the farmers?

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59. Which method is extensively used to define evolutionary relationships ?

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60. Explain in short : Molecular phylogeny

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61. Give an example of characteristics being used to determine how close two species are in evolutionary terms.



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



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



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64. Which things do we need to remember in an exercise of tracing the family trees of species ?



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65. Explain the idea of evolution.



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66. Explain the evolution of human beings.



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67. Which information have been obtained from the study of human evolution ?



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68. Why are human beings who look so different from each other in terms of size, colour and looks said to belong to the same species ?



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69. In evolutionary terms, can we say which among bacteria, spiders, fish and chimpanzees have a better body design ? Why or why not ?





Textual Exercise

1. 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

A. TTWW

B. TTWW

C. TtWW

D. TtWw

Answer:



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2. An example of homologous organs is a.our arm and a dog's foreleg. b.our teeth and an elephant's tusks. c.potato and runners of grass. d.all of the above

A. our arm and a dog's foreleg.

B. our teeth and an elephant's tusks.

C. potato and runners of grass.

D. all of the above

Answer: A::B::C::D



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3. In evolutionary terms, we have more in common with a.a Chinese school-boy. b.a chimpanzee. c.a spider. d.a bacterium.

A. a Chinese school-boy.

B. a chimpanzee.

C. a spider.

D. a bacterium.

Answer: A::B::C



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4. 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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5. How are the areas of study - evolution and classification - interlinked ?

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6. Explain the terms analogous and homologous organs with examples.

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

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8. Which method is extensively used to define evolutionary relationships ?

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

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10. Explain how sexual reproduction gives rise more visible variations than asexual reproduction. How evolution of those organisms that reproduce does this affect the sexually ?

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



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



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Additional Questions And Answers

1. Distinguish between :

Acquired characteristics and Hereditary characteristics



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2. Distinguish between :

Dominant trait and Recessive trait

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3. Explain the terms analogous and homologous organs with examples.

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4. Distinguish between :

Artificial selection and Natural selection

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5. Give scientific reasons for the following statements:

Sexual reproduction gives rise to variations.

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6. Give scientific reasons for the following statements:

The pea plants (*Pisum sativum*) were selected for Mendel's experiments.

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7. Give scientific reasons for the following statements:

The characters are under the control of genes.

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8. Give scientific reasons for the following statements:

The sex of the children is determined by father.



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9. Give scientific reasons for the following statements:

The chances of birth of a male child (son) or a female child (daughter) are equal.



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10. Give scientific reasons for the following statements:

Sometimes in the earth's crust the imprint of the entire

body or the organs are maintained.



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11. Give scientific reasons for the following statements:

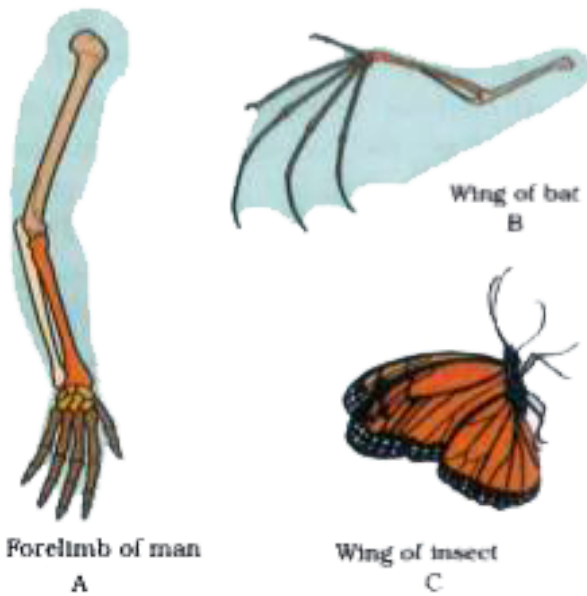
It is not true that human beings have evolved from chimpanzees.



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12. Carefully observe the given diagram/ chart and answer

the questions related with it:

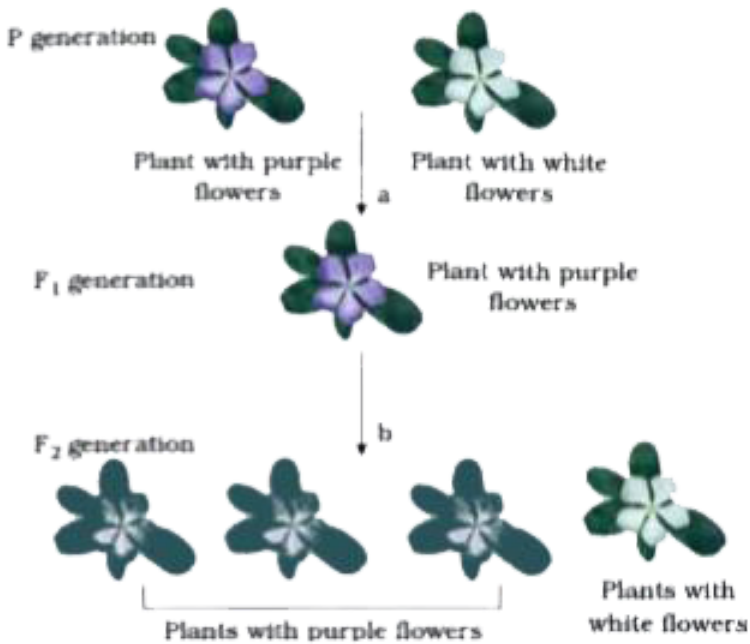


Form one pair of homologous organs and one pair of analogous organs from the diagrams given below:

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13. Carefully observe the given diagram/ chart and answer the questions related with it:

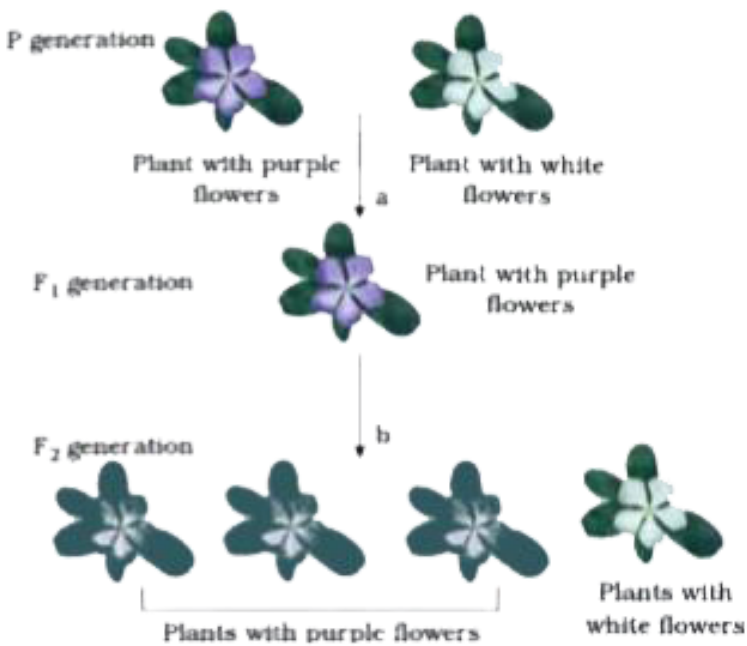
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In the given figure state suitable word in place of a and b for the type of reproduction.

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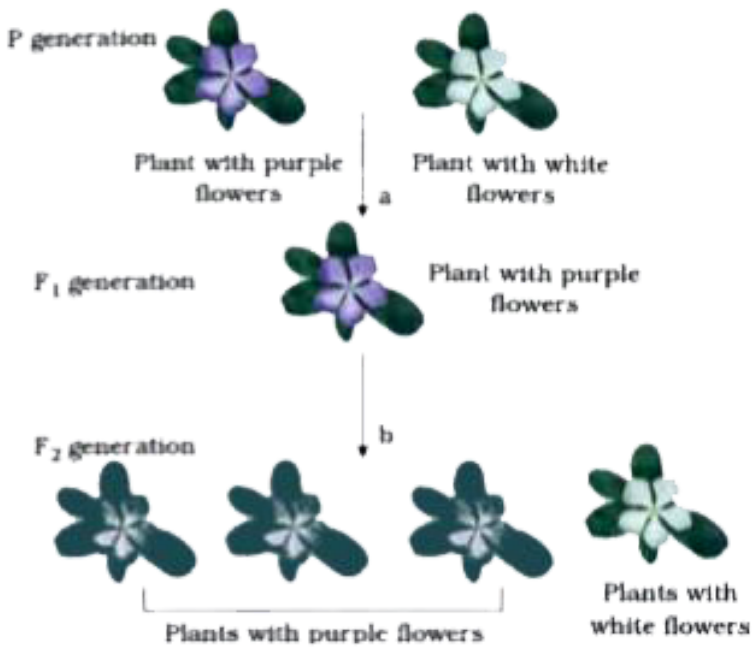
14. Carefully observe the given diagram/ chart and answer the questions related with it:



Which character is a dominant one? How would you decide that it is a dominant character?

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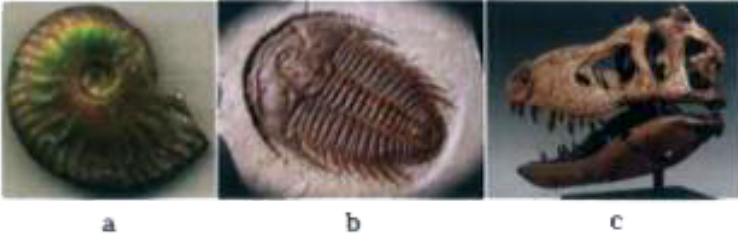
15. Carefully observe the given diagram/ chart and answer the questions related with it:



What is the ratio of expression of dominant and recessive traits in the F_2 generation?

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16. Identify the fossils a, b and c in the given diagrams:



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17. Mendel's experiment to study inheritance in the pea plant (*Pisum sativum*) is shown in the following diagram. Study the diagram carefully and complete the empty

boxes by filling them properly.

P (Parent) generation

RRyy

×

rrYY

Seed → Round, Green

Wrinkled, Yellow



F₁ generation



Seed → Round, Yellow

×

F₁

F₁

No. of plants

Ratio

315 Round, Yellow



108 Round, Green



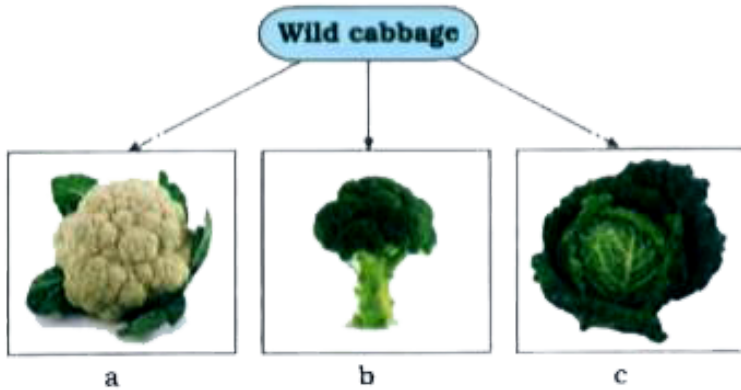
101 Wrinkled, Yellow



32 Wrinkled, Green



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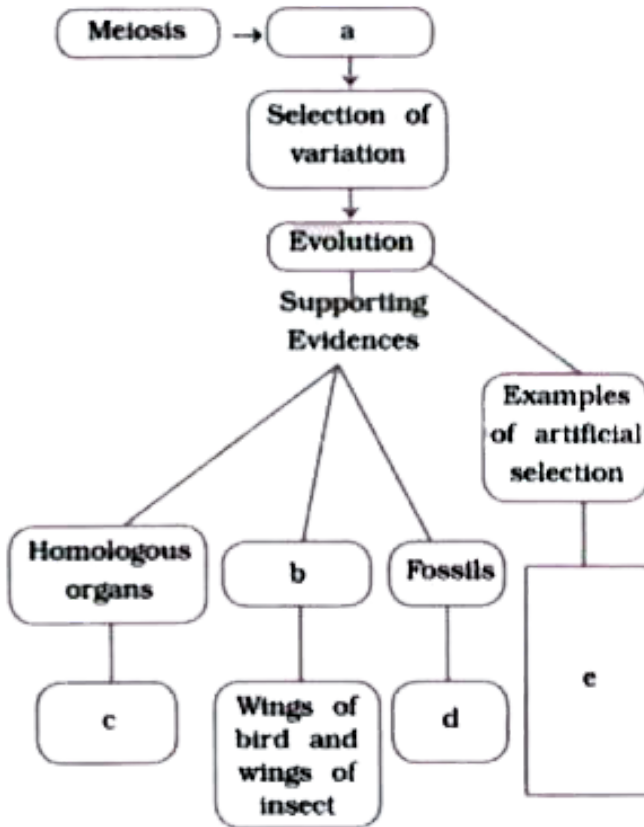
18.

Name the diagrams a, b and c and from which part of the wild cabbage are they obtained ? Which method is used for obtaining these ?

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Objective Questions And Answers

1. Fill in the missing details in the given chart:



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2. How you can say that some animals rely entirely on environmental cues for sex determination ?

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3. Name two organisms which are now extinct and are studied from their fossils.

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4. Name five varieties of vegetables which have been produced from 'wild cabbage' by the process of artificial selection.

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5. Name the ancestor of the following : Broccoli, Kohlrabi,
Kale



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6. Choose the one term from the following, which includes
the other three :

Broccoli, wild cabbage, cauliflower, cabbage.



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7. Whether pea plant is a self - pollinated plant or a cross
pollinated one ?



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8. Give the name of the flatworm which was the first to possess the eyes. State in which form and what it detects.



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9. State the probability of birth of offspring as a son or a daughter.



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10. How do X and Y chromosomes differ ?



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11. Which character indicates that the birds are closely related to Dinosaurs ?

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12. Which evidences in the field of biology are considered to be the ancient documents ?

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13. How do we know that extinct species ever existed ?

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14. For what purpose is the study of fossils important ?



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15. Give an example of homologous and analogous organs using same animals.



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16. Evidences from which types of organs do not suggest any common ancestry in the course of evolution ?



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17. Do all variations in a species have equal chances of surviving in the environment ? Why ?

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18. Who forms the basis for evolutionary processes ?

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19. What is earlobe ? Which are dominant and recessive variants respectively ?

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20. According to Mendel's experiment, the tall plants in F_1 generation were exactly the same as the tall plants of the parent generation ? Why ?



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21. How do germ cells make a single set of genes from the normal two copies in all other cells of body ?



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22. Can asexually reproducing organisms follow similar rules of inheritance ? Why ?



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23. Do tailless mice have tailless progeny ? Why or why not ?

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24. Explain the word: Micro-evolution

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25. What is called when two populations of a species cannot reproduce with each other ?

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26. What is the meaning of characteristics ?

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27. What allows us to make classification groups ?

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28. When is it said that two species have a common ancestor ?

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29. Which fossil was found in the Narmada Valley a few years ago ?

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30. Which method is now extensively used for tracing evolutionary relationships ?

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31. Which tools have been used for studying human evolution ?

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32. From where the genetic footprints of Homo sapiens can be traced ?



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33. Define: OR Explain the terms:

Heredity



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34. Define: OR Explain the terms:

Trait



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35. Define: OR Explain the terms:

Gene



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36. Define: OR Explain the terms:

Sex determination



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37. Define: OR Explain the terms:

Genetic drift



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38. Define: OR Explain the terms:

Speciation



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39. Define: OR Explain the terms:

Evolution



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40. Define: OR Explain the terms:

Natural selection



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41. The geographical isolation along with the variations leads to the formation of

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42. The classification of living organisms explain their relationships.

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43. Broccoli has been developed from by artificial selection.

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44. is called the science of heredity and variations.

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45. The idea of evolution of species by natural selection was given by

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46. Selection of by environmental factors forms the basis for evolutionary processes.

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47. The synthesis of enzymes in the cell is under the control of

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48. The growth of a pea plant depends on the amount of specific in the plant.

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49. The presence of Y-chromosome in human being is essential for being a

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50. provides diversity without any adaptation.

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51. The characteristic comes into existence due to changes occurring in DNA.

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52. The eyes of are very simple and in the form of a dot.

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53. The Dinosaurs having feathers, belong to class

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54. The existing mankind, present on the earth has originally descended from

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55. The reduction of weight in the beetle due to starvation is trait.

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56. In asexual reproduction, variations arise due to the changes occurring during DNA copying.

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57. State True or False. The garden pea plants of *Pisum sativum* selected by Mendel were having long life cycle and could be reared with lots of difficulties.

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58. State True or False. In Mendel's experiments, characters of both the parents were observed in F_1 generation.



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59. Both the types of pea plants, used as parent generation by Mendel in his experiments, were pure breeds in the expression of their characters.



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60. State True or False. Gene is a definite segment of DNA, which possesses information for the synthesis of a specific type of protein.



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61. State True or False. In human being, the son obtains one X-chromosome from each of the two parents, the mother and the father.

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62. State True or False. The sex determination in human being occurs right at the time when the fertilisation occurs therein.

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63. State True or False. In Dinosaurs, the feathers provided insulation in cold weather.



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64. State True or False. The internal structure and arrangement of bones of the forelimbs of frog, lizard, bird, bat and man are different.



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65. State True or False. The wings of birds and those of insects are homologous organs.



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66. In the experiment performed by Mendel on dihybrid inheritance, there are four types of plants formed in the F_1 generation.

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67. All human races are a single species.

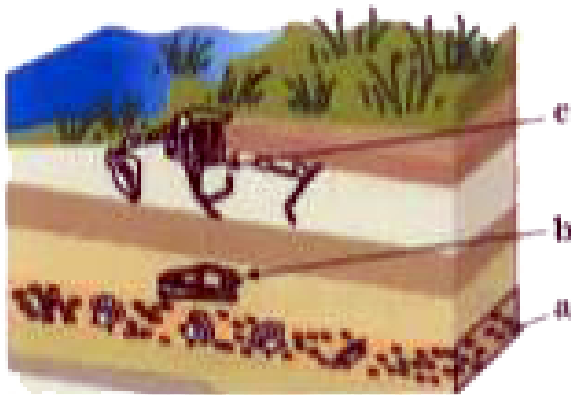
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68. State True or False. Since the life originated on the earth, the evolution is a continuous, non-stop process.

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69. State True or False. Two different species originated from a common ancestor can mutually reproduce amongst themselves.

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70.

Identify the fossils in successive layer a, b, and c.

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71.

What is your conclusion from this diagram ?

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(A)



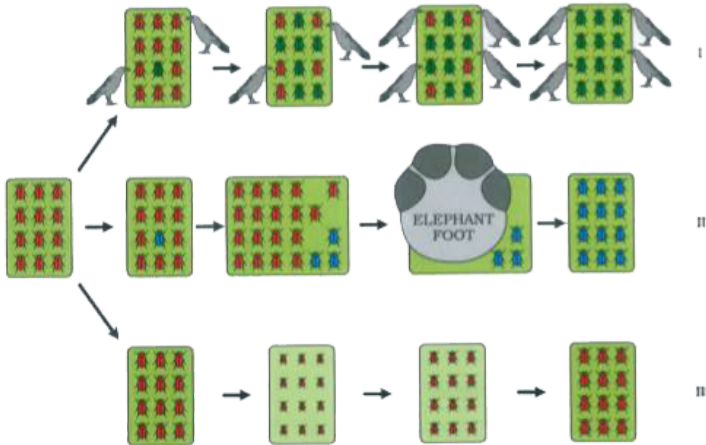
(B)

72.

Which diagram is correctly explained how does evolution proceed ? Why ?



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73.

From the diagram, state the result in case I, II and III.



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74. Match the following :

Column I	Column II
1. Gene	p. Genetical trait
2. New combination	q. Segment of DNA
3. Y-chromosome	r. Meiosis
4. Inheritance	s. Male sex



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75. Match the following :

Column I	Column II
1. Snail	p. Reptilia
2. Dinosaurs possessing feathers	q. Eye-spots for the first time
3. Ammonites	r. Can change sex
4. Planaria	s. Fossils



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76. Match the following :

Column I	Column II
1. Variation	p. Change in variety by selective hybridisation
2. Natural selection	q. Change in form or function of the organism
3. Artificial selection	r. Ratios of isotopes
4. Dating fossils	s. Evolution of species



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77. Match the following :

Column I (Characters in pea plant)	Column II (Dominant)	Column III (Recessive)
1. Seed	p. Yellow	a. Short
2. Seedcoat	q. Tall	b. White
3. Flower	r. Axial	c. Shrunk
4. Height	s. Round	d. Apical
	t. Purple	e. Green
	u. Oblong	f. Wrinkled



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78. Match the following :

Column I	Column II
1. Trilobite	p. Analogous organs
2. Knightia	q. Homologous organs
3. Arms of bird and bat	r. Fossil - fish
4. Wing of a bird and a bat	s. Fossil - invertebrate



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79. When hybridisation is carried out between a tall (TT) pea plant and a short (tt) pea plant, all the plants (offsprings) show the expression of tallness, because

a.the expression of tallness is dominant. b.the expression of short is dominant. c.the expression of tallness is recessive. d.the character of tallness in pea plant is not controlled by gene T or t.

A. the expression of tallness is dominant.

B. the expression of short is dominant.

C. the expression of tallness is recessive.

D. the character of tallness in pea plant is not controlled by gene T or t.

Answer: A::B::C::D



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80. Study following statements (P to R) and choose the correct alternative :

P: Those organs which have the same internal structure but different functions are called homologous organs.

Q: Organs which have different basic design but have similar appearance and carry out similar functions are called analogous organs.

R: The impressions of dead plants or animals that lived in

the past are known as fossils. a.Only R is true. b.All the three statements are true. c.Statements P and Q are true, but R is false. d.All the three statements are false.

A. Only R is true.

B. All the three statements are true.

C. Statements P and Q are true, but R is false.

D. All the three statements are false.

Answer: A::B::C::D



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81. Which is a false statement for variation ? a.All the variations in a species provide equal opportunity for

survival. b.Very few variations are generated in asexual reproduction. c.Variations selected by the environmental factors cause the occurrence of evolution. d.The change in the genetic material (DNA) results in variation.

A. All the variations in a species provide equal opportunity for survival.

B. Very few variations are generated in asexual reproduction.

C. Variations selected by the environmental factors cause the occurrence of evolution.

D. The change in the genetic material (DNA) results in variation.

Answer: A::B::C::D



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82. What do the examples of Dinosaurs having feathers and the birds having feathers suggest in the study of evolution ? a.The reptiles have been evolved from Aves. b.The Aves have been evolved from reptiles. c.Both are the animals of the same class. d.There is no evolutionary relationship between these two groups of animals.

A. The reptiles have been evolved from Aves.

B. The Aves have been evolved from reptiles.

C. Both are the animals of the same class.

D. There is no evolutionary relationship between these two groups of animals.

Answer: A::B::D

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83. Which scientist was the first to conduct systematic experiments for the study of heredity ? a.Watson b.Sutton
c.Mendel d.Khorana

A. Watson

B. Sutton

C. Mendel

D. Khorana

Answer: D



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84. Which factor conducts the expressive genetic information from one generation to another? a. Protein
b. DNA c. RNA d. Enzyme

A. Protein

B. DNA

C. RNA

D. Enzyme

Answer: A::D



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85. Which one of the following is not homologous?

- A. Forelimbs in humans and lizard
- B. Forelimbs in lizard and frog
- C. Wings of butterfly and bat
- D. Wings in bat and bird

Answer: A::B::D



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86. The Dinosaurs having feathers, belong to class

.....

A. Reptilia

B. Aves

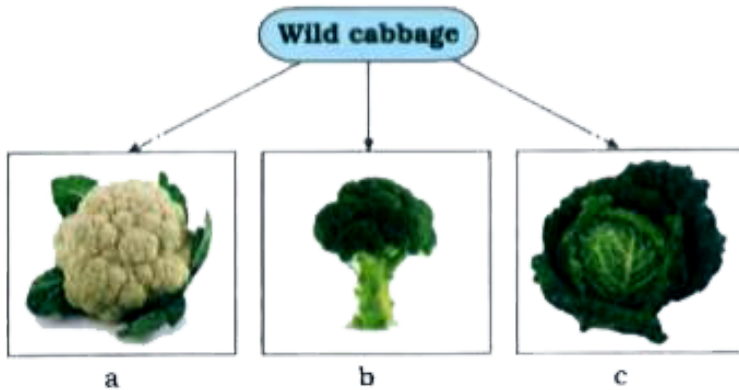
C. Mammalia

D. Both A and B

Answer: A



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87.

Name the diagrams a, b and c and from which part of the wild cabbage are they obtained ? Which method is used for obtaining these ?

A. Broccoli

B. Cauliflower

C. Kohlrabi

D. Kale

Answer: A::C



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88. From where the genetic footprints of Homo sapiens can be traced ?

- A. Asia
- B. Australia
- C. Africa
- D. America

Answer: A:C



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89. Which is the important factor for the formation of new species?

A. Geographical isolation of population

B. Variations

C. Genetic drift

D. All of the given

Answer: A:C

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90. In the result of Mendel's experiment on the inheritance of two characters, the ratio of the plants

showing yellow and wrinkled seeds and of the plants showing green and round seeds in F_2 generation is

A. 3 : 3

B. 9 : 3

C. 3 : 1

D. 9 : 1

Answer: C



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91. From where the genetic footprints of Homo sapiens can be traced ?

A. Africa

B. Eurasia

C. Indonesia

D. Philippines

Answer: A:C



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92. In which animal did the eyes originate first ?

a.Paramoecium b.Plasmodium c.Planaria d.Peripatus

A. Paramoecium

B. Plasmodium

C. Planaria

D. Peripatus

Answer: A



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93. Which organ of fish is homologous with the hand of human being?

A. Appendages

B. Fin

C. Gills

D. Lungs

Answer:



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94. How many types of sperms are found in man? a.One
b.Two c.Three d.Four

A. One

B. Two

C. Three

D. Four

Answer: A



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95. The Y-chromosome in human male

a.possesses the same size as that of X-chromosome. b.is larger in size than that of X-chromosome. c.is smaller in size than that of X-chromosome. d.is of double the size than that of X-chromosome.

A. possesses the same size as that of X-chromosome.

B. is larger in size than that of X-chromosome.

C. is smaller in size than that of X-chromosome.

D. is of double the size than that of X-chromosome.

Answer: A::B::C::D



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96. Who conducted studies on role of earthworms in soil fertility? a.Mendel b.Miller c.Urey d.Darwin

A. Mendel

B. Miller

C. Urey

D. Darwin

Answer: A::D



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97. The organs which perform different functions but have the same basic structure are known a.Homologous organs

b. Analogous organs c. Homolytic organ d. Analytic organ

A. Homologous organs

B. Analogous organs

C. Homolytic organ

D. Analytic organ

Answer: A



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98. If the fossil of an organism is found in the deeper layer of earth, then we can predict that a.the extinction of organism has occurred recently. b.the extinction of organism has occurred thousands of years ago. c.the

fossil position in the layers of earth is not related to its time of extinction. d.time of extinction cannot be determined.

- A. the extinction of organism has occurred recently.
- B. the extinction of organism has occurred thousands of years ago.
- C. the fossil position in the layers of earth is not related to its time of extinction.
- D. time of extinction cannot be determined.

Answer: A::C::D



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99. New species may be formed if:

(1) DNA undergoes significant changes in germ cells.

(2) there is no change in the genetic material.

(3)mating does not take place. a.(1) and (2) b.(1) c.(2) and

(3) d.(1), (2) and (3)

A. (1) and (2)

B. (1)

C. (2) and (3)

D. (1), (2) and (3)

Answer: A::C::D



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100. The presence of which of the following types of organs in two animals indicates that they are not derived from a common ancestor ? a.Homologous organs
b.Excretory organs c.Analogous organs d.Reproductive organs

A. Homologous organs

B. Excretory organs

C. Analogous organs

D. Reproductive organs

Answer: A



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101. Which is the function of gene? a.To form the structure of DNA. b.To form the structure of chromosome. c.To bring about the synthesize of protein. d.To synthesize DNA.

- A. To form the structure of DNA.
- B. To form the structure of chromosome.
- C. To bring about the synthesize of protein.
- D. To synthesize DNA.

Answer: A::B



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102. How many pairs of sex chromosomes are found in the somatic cells of the human being?

- A. One
- B. Two
- C. Three
- D. Four

Answer:



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103. How many sex chromosomes are found in the reproductive cells (gametes) of human being?

A. 1

B. 2

C. 23

D. 46

Answer: A



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104. Amongst Planaria, Insect, Octopus, Invertebrates and Vertebrates, the evolution of which organ can be explained stepwise? a.Ears b.Wings c.Eyes d.Feathers that develops

A. Ears

B. Wings

C. Eyes

D. Feathers that develops

Answer:



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105. The characteristic as response to environment a.is hereditary characteristic. b.is important for evolution. c.is not hereditary. d.descends in the offsprings.

A. is hereditary characteristic.

B. is important for evolution.

C. is not hereditary.

D. descends in the offsprings.

Answer: A::D



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106. Which is the befitting statement for the acquired characteristic ? a.It comes into existence due to changes in DNA. b.It is transmitted in the offspring through the parental gametes. c.The organisms are born with these characteristics. d.It develops as a response to the environment.

A. It comes into existence due to changes in DNA.

B. It is transmitted in the offspring through the parental gametes.

C. The organisms are born with these characteristics.

D. It develops as a response to the environment.

Answer: A:D



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107. Which of the following is not an acquired characteristic? a.To learn swimming by man b.To have a scar of wound on the human face c.To role on the skatting ring with the skates d.To have attached earlobe (of the pinna)

- A. To learn swimming by man
- B. To have a scar of wound on the human face
- C. To role on the skatting ring with the skates
- D. To have attached earlobe (of the pinna)

Answer: A::B::C::D



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108. For what purpose is the Carbon Dating system used?

- A. To determine constitution of the layer of earth.
- B. To estimate the age of fossils.
- C. To determine the constitution of fossils.

D. To utilize the artificial selection.

Answer: A



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109. Hybridization experiment performed by Mendel between a tall (TT) plant and a dwarf (tt) plant of *Pisum sativum* gave the following result in F_2 generation

- A. all plants are tall
- B. tall plants and dwarf plants in the ratio 3: 1
- C. tall plants and dwarf plants in the ratio
- D. tall plants and dwarf plants in the ratio 2: 1

Answer: A::B::C::D



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110. Which of the following statement is true for variation in organisms?

(1) The occurrence of differences among the individuals of the same species is known as variation.

(2) Variations decrease the possibilities of survival.

(3) The process of evolution decreases the variation in organisms.

(4) During meiosis, crossing over takes place between the genes and hence, new combinations are formed, which ultimately results in producing variations.

A. (1) and (3)

B. (1) and (4)

C. (2) and (4)

D. (2) and (1)

Answer: A::D



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111. A snail can change its sex. What does it indicate?

A. The sex determination therein is not a genetic phenomenon.

B. It is bisexual.

C. It is sterile.

D. Some of the chromosomes in its zygote differentiate into Y-chromosomes.

Answer: A::C::D



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112. Statement A: Fossils are considered as ancient documents.

Reason R: Genetic footprints of Homo sapiens can be traced with the help of fossils. Which is correct option for Statement A and Reason R?

A. Both A and R correct. R is explanation of A.

B. Both A and R correct but R is not explanation of A.

C. A is correct, R is incorrect.

D. A is incorrect, R is correct.

Answer: A::B::C::D

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113. Which theory tells us how life evolved from simple to more complex forms ?

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114. Identify me : I am small change in an organism, even though significant but does not explain in how new species come into existence.



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115. Find mismatched pair.

(a) Gene flow - Bound to happen between population of two different species.

(b) Genetic drift - Frequency of certain genes in a population changed over generation.

(c) Genetical variation - Inherited trait

(d) Gene - An informative section of DNA for protein



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116. Find correct sequence for the expression of tall trait in pea plant.

- (a) A lot of hormone will be made
- (b) A gene provides information for protein
- (c) A hormone triggers the growth in height
- (d) An enzyme works efficiently



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117. Which evolutionary explanation is correct about the feathers ?

- (a) Birds are very closely related to reptiles.
- (b) Birds and bat are very closely related to each other.



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118. The character of inflated peapod is dominant (I) and that of the shrunk peapod is recessive

(i). Draw a chart to explain the genotype of the offsprings, their character and ratio of the types:

1. $II \times ii$ 2. $Ii \times ii$ 3. $Ii \times Ii$



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119.

Trilobite: Invertebrate Fossil : : Dinosaur skull :



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120. According to evolutionary origin of eye- structure, arrange following in correct sequence :

Eye-like the wings, Insect-eye, Human-eye, Eyespots

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121. Who am I?

I provide diversity to organisms without any adaptations just by changing the frequency of certain genes in a population.

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122. Who suggested that life must have developed from the simple inorganic molecules ?

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123. Which of the following are examples of artificial evolution ?

Wild cabbage, green beetle, kale, kohlrabi, brown skin human, low weight beetle, red cabbage

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124. State the name of scientists who had successfully synthesised amino acids in laboratory.



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125. State the name of ideas essential for understanding evolution.



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Objective Questions And Answers Answer The Following Questions In Short

1. State the example of animal in which sex is not genetically determined.



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Objective Questions And Answers Fill In The Blanks

1. The variations generated during become hereditary.



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Objective Questions And Answers State Whether The Following Statements Are True Or False

1. State True or False. Asexual reproduction generates a large proportion of variations.



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Objective Questions And Answers Graph Diagram Based Questions



1. Identify the organism and label 'a' with its function.

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Objective Questions And Answers Select The Correct Alternative From Those Given Below Each Question

1. Select the correct alternative from those given below each question:

In which of the following, the new combinations of genes formed ? a.Vegetative reproduction b.Asexual reproduction c.Sexual reproduction d.Budding

A. Vegetative reproduction

B. Asexual reproduction

C. Sexual reproduction

D. Budding

Answer: A::C::D



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Objective Questions And Answers Answer As Directed Miscellaneous

1. Which study was conducted by Darwin as a naturalist ?

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Value Based Questions With Answers

1. Which theory/hypothesis was proposed by Charles Darwin ?

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2. Ranjeet has 3 daughters. His wife is pregnant again and is told by Ranjeet that if she does not give birth to son, she will be thrown out of the house. She is also asked to go for sonography and remove foetus if it is found to be female.

Answer the questions based on this information.

Who is responsible for the sex of the children ? - Ranjeet or his wife.



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3. Ranjeet has 3 daughters. His wife is pregnant again and is told by Ranjeet that if she does not give birth to son, she will be thrown out of the house. She is also asked to

go for sonography and remove foetus if it is found to be female.

Answer the questions based on this information.

Is removing female foetus correct measure ?

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4. Ranjeet has 3 daughters. His wife is pregnant again and is told by Ranjeet that if she does not give birth to son, she will be thrown out of the house. She is also asked to go for sonography and remove foetus if it is found to be female.

Answer the questions based on this information.

Which sex chromosome of Ranjeet was not used in case of birth of his 3 daughters ?

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5. Ranjeet has 3 daughters. His wife is pregnant again and is told by Ranjeet that if she does not give birth to son, she will be thrown out of the house. She is also asked to go for sonography and remove foetus if it is found to be female.

Answer the questions based on this information.

Why is prenatal sex determination banned ?

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6. Ranjeet has 3 daughters. His wife is pregnant again and is told by Ranjeet that if she does not give birth to son,

she will be thrown out of the house. She is also asked to go for sonography and remove foetus if it is found to be female.

Answer the questions based on this information.

How can you counsel Ranjeet ?

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7. Sachin Tendulkar, a world famous name in cricket world who holds almost all batting records. His son Arjun hasn't such cricket skill. Like this, Amitabh Bachchan, a great actor in bollywood but his son Abhishek hasn't succeed like him.

Is skill like batting or acting inherited ? Why or why not ?

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8. Sachin Tendulkar, a world famous name in cricket world who holds almost all batting records. His son Arjun hasn't such cricket skill. Like this, Amitabh Bachchan, a great actor in bollywood but his son Abhishek hasn't succeed like him.

Which type of traits, you called batting, acting, etc. ?



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9. Sachin Tendulkar, a world famous name in cricket world who holds almost all batting records. His son Arjun hasn't such cricket skill. Like this, Amitabh Bachchan, a great actor in bollywood but his son Abhishek hasn't succeed

like him.

Arjun is short and Abhishek is tall. What you think about height ?



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10. Which were the reptilian characters and which were the avian characters in the fossil Archaeopteryx? You can

take help of your subject teacher?



Archaeopteryx

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11. Everyone should have knowledge about his/her blood group as well as the blood group of family members.

There are four blood group A, B, AB and O.

You consult your family doctor and get more knowledge

about blood group.

How is the knowledge of blood grouping essential ?

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12. Everyone should have knowledge about his/her blood group as well as the blood group of family members.

There are four blood group A, B, AB and O.

You consult your family doctor and get more knowledge about blood group.

Whether the blood group of an individual is a hereditary character or an acquired character ?

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13. Everyone should have knowledge about his/her blood group as well as the blood group of family members.

There are four blood group A, B, AB and O.

You consult your family doctor and get more knowledge about blood group.

Whether the son inherits blood group from his father and the daughter inherits blood group from her mother?



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14. Everyone should have knowledge about his/her blood group as well as the blood group of family members.

There are four blood group A, B, AB and O.

You consult your family doctor and get more knowledge

about blood group.

Whether the blood group of the offspring is under the influence of both the parents (father and mother)?

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15. Everyone should have knowledge about his/her blood group as well as the blood group of family members.

There are four blood group A, B, AB and O.

You consult your family doctor and get more knowledge about blood group.

Whether the genes of blood groups have their dominant and recessive expression?

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Practical Skill Based Questions With Answers

1. You are supplied with two sets of seeds of pea plants. One set is yellow and round seeds with gene constitution YYRR and other set is green and round seeds with gene constitution yyRR. From both sets of seeds plants are cultivated. Pea plant is self-pollinated but arrange artificial cross between two given plants cultivated from seeds. Which offsprings do you expect ? show with chart.



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2. You observed trait of earlobe whether they are free or attached in four different couples, along with their children.

Couple has all the children with free ear-lobe even mother has attached earlobe. What do you think about father's earlobe ?

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3. You observed trait of earlobe whether they are free or attached in four different couples, along with their children.

Couple has children with 1:1 ratio for free and attached earlobe. What do you think about their father-mother for this trait ?

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4. You observed trait of earlobe whether they are free or attached in four different couples, along with their children.

In a couple, both father and mother have attached earlobe. What do you think about their children ?



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5. You observed trait of earlobe whether they are free or attached in four different couples, along with their children.

A couple has four children, out of which three have free earlobe and one has attached earlobe. What do you think about their parents ?



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