BIOLOGY

BOOKS - ZEN BIOLOGY (KANNADA ENGLISH)

HEREDITY AND EVOLUTION

Questions Section In Text Questions

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

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

with the help of a cross.

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4. How does Mendel's experiment show 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 $0-$ 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 the different ways in which individuals with a particular trait may increase

in a population?

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8. Why are traits acquired during the life time of an individual not inherited? Give one example for such trait

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9. Why are the small numbers of surviving tigers a cause of worry from the point of view

of genetics?

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10. What factors could lead to the rise of a 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 characteristics being used to determine how close two species are in evolutionary terms.

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14. Can the wing of a butterfly and the 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 who look so different from each other in terms in size, colour and looks said to belong to the same species?

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

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Questions Section Textual Questions

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

Answer: D

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2. An example of homologous organs is

A. our aram and a dog's fore-log

B. our teeth and an elephants's tusks.

C. potato and runners of grass.

D. all of the above.

Answer: D

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3. In evolutionary terms, we have more in common

A. a Chinese school - boy

B. a chimpanzee

C. a spider

D. a bacterium

Answer: A

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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 area 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. Explain the importance of fossils in deciding 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 to more viable variations than asexual reproduction. How does this affect the evolution of those organisms that reproduce sexually?

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

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12. 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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B. Potato and Brinjal

C. Radish and Carrot

D. Radish and Bottle-gourd

Answer: C

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2. Select the set of homologous organs from the following

A. Limbs of birds and reptiles

B. Limbs of reptiles and amphibians

C. Limbs of birds and human beings

D. Wings of birds and bats

Answer: C

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3. Which of the following is a correct set of homologous organs?

A. Forelimbs of frog, bird and lizard

B. Spine of cactus and thorn of bougainvillea

C. Wings of bat and wings of butterfly

D. Wings of a bird and wings of a bat?

Answer: D

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4. Which of the following is a totally is impossible outcome of Mendel's Experiment?

A. 3 tall I short plant

B. 24 tall and 8 short plants

C. 8 tall and 0 short plants

D. 4 tall plants and I medium height plant.

Answer: A

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5. Which of the following is not a direct conclusion that can be drawn from Mendelian experiment?

A. Only one parental trait is expressed

B. Two copies of each trait are inherited in sexually reproducing organism

C. For recessive trait to be expressed, both copies should be identical

D. Natural selecion can be alter frequency of an inherited trait.

Answer: D

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6. Which one is a possible progeny in F2 generation of pure bred tall plant with round seed and short plant with wrinkled seeds?

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7. Which section of DNA provides information for one protein

A. Nucleus

B. Chromosomes

C. Trait

D. Gene

Answer: D

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8. Which of th following is not controlled by genes?

1] Weight of a person 2] Height of a person

A. only1

B. only 2

C. both 1 and 2

D. sometimes 1 and sometimes 2

Answer: D

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9. Which of the these is homozygous recessive?

A. ss

B. Ss

C. SS

D. S

Answer: B

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10. What will be the genotypic ratio of the cross between Rr and rr?

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12. The offspring resulting from a cross between two pure homozygous recessives would be

A. 50 % homozygous recessive and 50% homozygous dominant

B. 75 % homozygous recessive and 25% heterozygous dominant

C. 75 % homozygous recessive and 25% homozygous dominant

D. 100% homozygous recessive

Answer: D

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13. Which of the following sentences is about the process?

A. There is no real 'progress' in the idea of evolution

B. humans are unique, a totally new type of organism

C. progress is nature's religion

D. Evolution of life forms was rapid in the beginning ages.

Answer: B

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14. In man the chromosome number is 46. How many chromosome are present in man's muscle cells?

A. 23

B. 46

C. 69

D. varies

Answer: B

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15. Speciation takes place when variation occurs with

A. mood changes

B. death of an organism

C. changes due to accidents

D. geographical isolation

Answer: D

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16. By studying analogous structures we look for

A. Similarities in appearance and function but different in structure

B. similarities in appearance but differences if function

C. Similarities in organ structure

D. Similarities in cell make up

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17. Which of the following are not examples of analogous structures?

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19. In dogs the chromosome number is 78. How many chromosomes are present in the dog sperm?

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B. 39

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D. Varies

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B. 1

C. 3

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Colour of the seed	Position of the flower
Green (G)	Axial (A)
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The genetic makeup with green seed and terminal flower is indicated as

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Zen Additional Questions Section Multiple Choice Questions Ncert Exemplar Questions

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A. vegetative reproduction

B. asexual reprosuction

C. sexual reproduction

D. budding

Answer: C

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A. double fertilisation

B. self pollination

C. cross fertillisation

D. no fertillisation

Answer: B

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3. A cross between a tall plant (TT) and short pea plant (tt) resulted in progeny that were all tall plants because

A. tallness is the dominant trait

B. shortness is the dominant trait

C. tallness is the recessive trait

D. height of pea plant is not governedb by gene 'T' and 't'

Answer: A

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4. Which of the following statements is incorrect?

A. For every hormone there is gene .

B. For every protein there is a gene.

C. For production of every enzyme there is a gene .

D. For every molecule of fat there is a gene.

Answer: D

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5. If a round, green seeded pea plant (RR yy) is crossed with wrinkled, yellow seeded pea plant, (rr YY) the seeds produced in F 1 generation are

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B. round and green

C. wrinkled and green

D. wrinkled aand yellow

Answer: A

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6. The maleness of a child is determined by

A. the X chromosome in the zygote

B. the Y chromosome in zygote

C. the cytoplasm of germ cell which determines the sex

D. sex is determined by chance

Answer: B

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7. A zygote which has an X-chromosome inherited from the father will develop into a

A. boy

B. girl

C. X- chromosome does not determine the sex of a child

D. either boy or girl

Answer: B

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8. Select the incorrect statement:

A. Frequency of certain genes in a population change over several generations resulting in evolution

B. Reduction in weight of the organism due to starvation is genetically controlled

C. Low weight parents can have heavy weight progeny

D. Traits which are not inhertied over generatios do not cause evolution

Answer: B

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9. The following vegetables are kept in a basket: Potato, Tomato, Radish, Brinjal, Carrot, Bottle-gourd which two of these vegetables correctly reresent the homologous structure?

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B. Carrot and tomato

C. Radish and Carrot

D. Radish and potato

Answer: C

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10. Select the correct statement:

A. Tendril of a pea plant and phylloclade of Opuntia are homologous

B. Tendril of a pea plant and phylloclade of Opuntia are analogous

C. Wings of birds and limbs of lizards are analogous

D. Wings of birds and wings of bat are homologous

Answer: A

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11. If the fossil of an organism is found in the deeper layers 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 o extinction

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C. both maternal and paternal DNA

D. neither by paternal nor by maternal DNA

Answer: C

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A. two individuals of a species

B. two species of a genus

C. two genera of a family

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15. According to the evolutionary theory, formation of a new species is generally due to

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16. From the list given below, select the character which can be acquired but not inherited

A. colour of eye

B. colour of skin

C. size of body

D. nature of hair

Answer: C

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17. The two versions of a trait (character) which are brought in by the male and female gametes are situated on

A. copies of the same chromosome

B. two different chromosome

C. sex chromosomes

D. any chromosome

Answer: A

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18. On crossing a tall plant with a dwarf plant Mendel found that the ratio of dwarf plants in F2 generation was

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C. $1:1$

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19. The numberof pair (s) of sex chromosomes in the zygote of humans is

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20. The theory of evolution of species by natural selection was given by

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21. Some dinosaurs had fathers althought they could not fly but birds have feathers that help them to fly. In the context of evolutin this means that

A. reptiles have evolved from birds

B. there is no evolutionary connection between reptiles and birds

C. feathers are homologous structure in both the organisms

D. birds have evolved from reptiles

Answer: D

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22. Which of the following is analogous to the wing of a parrot?

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B. there is no evolutionary connection between reptiles and birds

C. feathers are homologous structure in both the organisms

D. birds have evolved from reptiles

Answer: D

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44. Which of the following is analogous to the wing of a parrot?

A. Flippers of whale.

B. Foreleg of horse

C. Front leg of log

D. Wing of housefly

Answer: D

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Zen Additional Questions Section Very Short Answer Vsa Type Questions

1. If an animal is similar to its ancestors, what does it imply?

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2. Give the respective scientific terms used for studying:

(i) the mechanism by which variations are created and inherited and

(ii) the development of new type of organisms from the existing ones.

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3. What percent of green-seeded plants will be yielded in the F_2 generation, when a F_1 hybrid

pea plants producing yellow seeds are crossed?

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4. In humn beings , blue eye colour is recessive to brown eye colou. If a blue eyed man has a brown eyed mother then find:

a] What are the possible genotypes of his father?

b] What is the genotype of the man and his mother?

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

Watch Video Solution

6. What is gene? OR Inheritance/ herdity is possible because of a certain factor present in organisms. What is this factor?

Watch Video Solution

7. Give an example where sex is determined by environmental factors.

Watch Video Solution

8. Why is that the unit of evolution s population, not the individual.

Watch Video Solution

9. In a beetle population, the number of green beetles is more than red and blue beetles, Give a reason behind this situation.

Watch Video Solution

10. An organism which is a worm, has very simple 'eyes',that are really eyes spots which detect light. Name the organism.

Watch Video Solution

11. Write one word for the formation of new species due to gradual change over long period of time.

Watch Video Solution

12. Name two human traits that show variation.

Watch Video Solution

13. The gene for brown coloured hair is recessive that of gene for black coloured hair. What is the hair colour of a person who has inherited a gene for brown coloured hair from mother and black coloured hair from father?

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Zen Additional Questions Section Short Answer Vsa Type Questions

1. The chromosomes of the parent's are the same as the offspring's . Justify the statement.

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2. Does genetic combination of mothers play a significant role in determining the sex of a new born?

Watch Video Solution

3. A father has 23 pairs of chromosomes and a mother has 23 pairs of chromosomes . Their offsprings are formed by the fusion of their respective gemetes. Then why don't their offspring has 46 pair of chromosomes?

Watch Video Solution

4. Some dinosaurs had feather but could not fly using these feathers. Why ?

Watch Video Solution

5. Human body is made up to trillons of cells. Why is it necessary for every cell to have the entir set of chromosomes pairs?

Watch Video Solution

6. The ability to roll the tongue is dominant over the inability to do o in humans.

a] If two heterozygous tonue-roller have childern, what genotypes could their children have?

b] If a non-tongue-roller has children with a homozygous tongue-roller, what will their children's genotypes be?

Watch Video Solution

7. Does genetic combination of mothers play a significant role in determining the sex of a new born?

Watch Video Solution

8. Mention three important features of fossils which help in the study of evolution.

Watch Video Solution

9. Why do all the gametes formed in human females have an X chromosome?

Watch Video Solution

10. In human beings, the statistical probability of getting either a male or a female child is 50%. Give reasons and explain with the help of a diagram.

Watch Video Solution

11. A very small population of a species faces a greater threat of extinction than a larger population. Provide a suitable genetic explanation.

Watch Video Solution

12. Does the occurrence of diversity of animals on earth suggest their diverse ancenstry also? Discuss this point in the light of evolution.

Watch Video Solution

13. Give the pair of contrasting traits of the following characters in pea plant and mention which is dominant and recessive (i) yellow seed (ii) round seed.

Watch Video Solution

14. Mention the advantages of selecting the pea plant for experiment, by Mendel.

Watch Video Solution

15. A woman has only daughters. Analyze the situation genetically

and provides a suitable explanation.

Watch Video Solution

16. List in tabular form, two distinguishing features between the acquired traits and the inherited traits with one example of each.

Watch Video Solution

17. (a) Cite the evidence on the basis of which it is concluded that birds have evolved from reptiles.

(b) Insects, Octopus, Planaria and Vertebrates also possess eyes. Can these animals be grouped together on the basis of the eyes they possess. Why or why not? Give reason to justify your answer.

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18. List in tabular form, two distinguishing features between the acquired traits and the inherited traits with one example of each.

Watch Video Solution

19. Explain with the help of an example, how the following provide evidences in favor of evolution: Fossils

Watch Video Solution

20. How do Mendel's experiments show that

a] traits may be dominant or recessive?

b] inheritance of two traits is independent of each other?

Watch Video Solution

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

Watch Video Solution

22. How does Mendel's experiment show that traits are inherited independently?

Watch Video Solution

23. In one of his experiments with pea plants Mendel observed that when a pure tall pea plant is crossed with a pure dwarf pea plant, in the first generation, F_1 only tall plants appeared.

(i) What happens to the traits of the dwarf plants in this case?

(ii) When the F_1 generation plants were self-fertilised, he observed that in the plants of second generation, F_2 both tall plants and dwarf plants were present. Why it happened? Explain briefly.

Watch Video Solution

24. What are chromosomes? Explain how in sexually reproducing organisms the number of chromosomes in the progeny is maintained.

Watch Video Solution

25. Explain the terms

(i) Speciation (ii) Natural selection

26. A pea plant with blue colour flower denoted by BB is cross-bred with a pea plant with white flower denoted by WW.

(i) What is the expected colour of the flowers in their F_1 progeny?

(ii) What will be the percentage of plants

bearing white flower in F_2 generation, when the flowers of F_1 plants were selfed?

(iii) State the expected ratio of the genotype BB and BW in the F_2 progeny.

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27. How were farmers able to obtain present day cabbage, cauliflower and broccoli from wild cabbage?

Watch Video Solution

28. A couple has two children-a boy and a girl. Both the parents have detached ear lobes while th children have attached ear lobes?

a] How is this possible?

b] Please write the genotypes of the mother, father, te boy and the girl .

(Clue: attached earlobe is represented as e while the detached as E)

Watch Video Solution

29. Guniea pig having black colour when crossed with guinea pig having same colour produced 80 offsprings, out of which 60 were black and 20 were whie. Now, find out

a] What is the possible genotype of the guinea pigs?

b] Which traits is dominant and which traits is recessive?

c] What is this cross called as and what is its phenotypic ratio?

Watch Video Solution

30. All human races like Africans, Asians, Europeans, Americans and others look so different from each other still they belong to the same species. Give three points to justify the statement.

 Watch Video Solution

31. Shibu's father is a wrestler and has a robust body. His son was thin

a] Is it true a wrestler's son should also have

heavy muscles?

b] What type of character is it - acquiredor inherited?

c] If you are shibu's friend how will you convince him that the is normal?

Watch Video Solution

32. The chromosomes of the parent's chromosomes are the same as the offspring's . Justify the statement.

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View Text Solution

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View Text Solution

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View Text Solution

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Watch Video Solution

45. Why did Medal choose pea plant for his experiments?

View Text Solution

46. A woman has only daughters. Analyse the situation genetically and provides a suitale explanation.

View Text Solution

47. Tabulate two distinguished features between acquired traits and inherited traits with two one example of each.

View Text Solution

48. Give the evidence that birds evolved from reptiles. Insects, octopuses, planaria all possess eyes. Can we group these organisms together based on the eyes they possess?

(b) Justify your answer.

View Text Solution

49. Distinguish between the acquired traits and the inherited traits in abular form, giving one example for each.

View Text Solution

50. Explain with the help of an example, how the following provide evidences in favour of evolution: Fossils

View Text Solution

51. How do Mendel's experiments show that

a] traits may be dominant or recessive?

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View Text Solution

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View Text Solution

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View Text Solution

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a] Specitation

b] Natural Selecion

View Text Solution

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c] State the expected ratio of the genotype BB and Bw in the F_2 progeny.

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61. The human beings who look so different from each other in terms of colour, size and

looks are said to belong to the same species. Why? Justify your answer.

 Watch Video Solution

62. Shibu's father is a wrestler and has a robust body. His son was thin

a] Is it true a wrestler's son should also have heavy muscles?

b] What type of character is it - acquiredor inherited?

c] If you are shibu's friend how will you convince him that the is normal?

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Zen Additional Questions Section Long Answer La Type Questions

1. a] How many pairs of chromosomes are present in human beings? Out of these, how many are sex-chromosomes?

b] How many types of sex-chromosomes are found in human Beings?

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2. Define evolution. How does it occur? Describe how fossils provide us evidences in support of evolution

Watch Video Solution

3. Does geographical isolation of individuals of a species lead to formation of a new species? Provide a suitable explanation.

Watch Video Solution

4. What is meant by speciation? List four factors that could lead to speciation. Which of these cannot be a major factor in the speciation of a self-pollinating plant species. Give reason to justify your answer.

Watch Video Solution

5. Bacteria have a simpler body plan when compared with human beings. Does it mean that human beings are more evolved than bacteria? Provide a suitable explanation.

Watch Video Solution

6. All human races like Africans, Asians, Europeans, Americans and others look so different from each other still they belong to

the same species. Give three points to justify the statement.

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7. Differentiate between monoecious and dioecious plants. Give one example of each.

Watch Video Solution

8. Give reasons why acquired characters are not inherited. NCERT Exemplar

Watch Video Solution

9. Evolution has exhibited a greater stability of molecular structure when compared with morphological structures. Comment on the statement and justify your opinion. NCERT Exemplar

Watch Video Solution

10. In the following crosses write the characteristics of the progeny

Cross	Progeny
a] RR YY x RR YY Round, yellow Round, yellow	....
b] Rr Yy x Rr Yy Round, yellow Round, yellow	....
c] rr yy x rr yy wrinkled, green wrinkled, green	....
d] RR YY x rr yy Round, yellow wrinkled, green	....

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11. a] Study the following cross and showing self pollination in FI, fill in the blank and answer the question that follows: [NCERT

Exemplar]

Parents:	$RRYY$	$\times$	$rryy$
	Round, yellow		wrinkled, green
Fl	$RrYy$	$\times$	?
	Round, yellow		

b] What are the combinations of character in the F_2 progeny? What are their ratios?

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12. Give the basic features of the mechanism of inheritance.

Watch Video Solution

13. Give reasons for the appearance of new combinations

of characters in the `F_2 progeny.

Watch Video Solution

14. Write the differences between homologous organs and analogous organs.

(ii) Write tlie dilferences between the sex chromosomes of man and sexchromosones of woman.

(iii) Sex of achildis determined by the latler. How?

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15. i] How does relative method help to determine the age of fossils?

ii] "Experiences of an individual during its life time cannot direct evolution." Why?

iii] "Chromosomes inherited from the father determines the sex of a child." Explain.

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16. The plant bearing round yellow coloured (RrYy) seed are self pollinated with the same plant. Represent the result obtained in the F, generation of dihybrid cross with the help of a checker board. Mention the varieties of plants obtained in F, generation.

Watch Video Solution

17. What is evolution? Explain the three evidences for evolution.

Watch Video Solution

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View Text Solution

22. Bacteria have a simpler body plan when compared with human beings. Does it mean that human beings are more evolved than bacteria? Provide a suitable explanation.

View Text Solution

23. All the human races like Africans, Asians, Europeans, Americans and others might have evolved from a common ancestor. Provide a few evidences in support of this view.

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24. Differentiate between inherited and acquired characters. Give one example for

each type.

Watch Video Solution

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