



BIOLOGY

BOOKS - OSWAL PUBLICATION

HEREDITY AND EVOLUTION

Stand Alone Mcqs

1. Which of the following statement is incorrect?

A. For every hormone there is a 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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2. If a round, green seeded pea plant (RR yy) is crossed with wrinkled, yellow seeded pea plant, (rr YY) the seeds production in F_1 generation are

- A. round and yellow.
- B. round and green.
- C. round and green.
- D. wrinkled and yellow.

Answer: A



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3. 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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4. 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



5. 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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6. Two pink coloured flower on crossing resulted in 1 red, 2 pink and 1 white flower progeny. The nature of the cross will be

A. double fertilisation.

B. self-pollination.

C. cross fertilisation

D. no fertilization.

Answer: C



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7. 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 governed by gene 'T' or 't'

Answer: A



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8. The number of pair(s) of sex chromosomes in the zygote of humans is

A. one.

B. two.

C. three.

D. four.

Answer: A



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

A. a Chinese school-boy.

B. a chimpanzee

C. a spider

D. a bacterium

Answer: A



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

A. Mendel

B. Darwin

C. Morgan

D. Lamarck

Answer: B



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11. Theory of inheritance of acquired characters was given by

A. Mendel

B. Darwin

C. Morgan

D. Lamarck

Answer: D



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12. 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 of extinction

D. time of extinction cannot be determined.

Answer: B



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Assertion Ans Reason Based Mcqs

1. Assertion: A geneticist crossed a pea plant having violet flowers with a pea plant with

white flowers, he got all violet flowers in first generation.

Reason: White colour gene is not passed on to next generation.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: C



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2. Assertion (A): Mendel chose a number of varieties of garden pea as plant material for his experiments.

Reason (R): Garden pea has well defined characters and is bisexual.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: A



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3. Assertion (A): In humans, males play an important role in determining the sex of the

child.

Reason (R): Males have two X chromosomes.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: C



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4. Assertion (A): Learning a skill such as dance and music is an acquired trait.

Reason (R): Acquired traits develop in the life time of an individual and do not pass to the progeny.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: A



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5. Assertion (A): Traits like eye colour or height are inherited traits.

Reason (R): Inherited traits are not transferred from parents to young ones.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: C



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6. Assertion (A): Fossils are remains of dead organisms.

Reason (R): It is helpful in study of evolution .

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: B



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7. Assertion (A): Wings of butterfly and wings of bat are analogous organs.

Reason (R): Analogous organs have different origin and structural plan but same function.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is NOT the correct explanation of A.

c) A is true but R is false.

d) A is false and R is true.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: A



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8. Assertion (A): Speciation is the process of formation of a new species from a pre-existing one.

Reason (R): Mutation plays a role in speciation

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: A



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9. Assertion (A): Natural selection is the phenomenon by which the nature selects those species which possess survival advantage over the other species.

Reason (R): According to theory of natural selection, there is struggle of existence within

the species of a population for the environmental resources and their struggle leads to survival of certain organisms and elimination of the less competent species.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is NOT the correct explanation of A.

C. A is true but R is false.

D. A is false and R is true.

Answer: A



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Case Based Mcqs

1. In a cross between plants with purple flowers and plants with white flowers, the offspring of F_1 generation all had white flowers. When the F_1 generation was self-crossed, it was observed in the F_2 generation that out of 100, 75 flowers were white. Make a

cross and answer the following questions:

The above cross is known as:

A. Monohybrid cross

B. Dihybrid cross

C. Test cross

D. Back cross

Answer: A



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2. In a cross between plants with purple flowers and plants with white flowers, the offspring of F_1 generation all had white flowers. When the F_1 generation was self-crossed, it was observed in the F_2 generation that out of 100, 75 flowers were white. Make a cross and answer the following questions:

In a monohybrid cross between two heterozygous individuals, percentage of pure homozygous individuals obtained in F_1 generation is?

A. 0.25

B. 0.5

C. 0.75

D. 1

Answer: B



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3. In a cross between plants with purple flowers and plants with white flowers, the offspring of F_1 generation all had white

flowers. When the F_1 generation was self-crossed, it was observed in the F_2 generation that out of 100, 75 flowers were white. Make a cross and answer the following questions:

Which of these is not the genotype of F_2 progeny?

A. WW

B. Ww

C. ww

D. Wp

Answer: D



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4. In a cross between plants with purple flowers and plants with white flowers, the offspring of F_1 generation all had white flowers. When the F_1 generation was self-crossed, it was observed in the F_2 generation that out of 100, 75 flowers were white. Make a cross and answer the following questions:

The ratio of 'White: generation is Purple' flowers in the F_2

a) 3:1

b) 1:2

c) 1:3

d) 2:1

A. 3:1

B. 1:2

C. 1:3

D. 2:1

Answer: A



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5. Study the given cross showing self pollination F_1 and answer the following questions from Q.1. to Q.4.



The missing blank in the above cross is:

A. RrYy

B. RRYy

C. RryY


D. rryy

Answer: A



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6. Study the given cross showing self pollination F_1 and answer the following questions from Q.1. to Q.4.

 The combination of characters in the F_2 progeny are:

A. Round Yellow: Round Green: Wrinkled

Yellow: Wrinkled Green

B. Round Green : Round Yellow Wrinkled

yellow: Wrinkled Green

C. Round Yellow : Round Green Wrinkled

Green: Wrinkled yellow

D. Round Green : . Round Yellow : Wrinkled

yellow: Wrinkled Green

Answer: A



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7. Study the given cross showing self pollination F_1 and answer the following questions from Q.1. to Q.4.

 The ratio of the combination of characters

in the F_2 progeny is:

A. 3:1

B. 1:2:1

C. 1:1:1

D. 9:3:3:1

Answer: D



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8. Study the given cross showing self pollination F_1 and answer the following questions from Q.1. to Q.4.



A Mendelian experiment consists 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 could be depicted as

A. TTWW

B. TTww

C. TtWW

D. TtWw

Answer: C



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9. A person first crossed pure-bred pea plants having round-yellow seeds with pure-bred pea plants having wrinkled-green seeds and found that only A-B type of seeds were produced in

the F_1 generation. When F_1 generation pea plants having A-B type of seeds were cross-bred by self-pollination, then in addition to the original round-yellow and wrinkled-green seeds, two new varieties A-D and C-B type of seeds were also obtained.

What are A-B type of seeds?

- A. Round -yellow
- B. Round- green
- C. Wrinkled-yellow
- D. Wrinkled- green

Answer: A



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10. A person first crossed pure-bred pea plants having round-yellow seeds with pure-bred pea plants having wrinkled-green seeds and found that only A-B type of seeds were produced in the F_1 generation. When F_1 generation pea plants having A-B type of seeds were cross-bred by self-pollination, then in addition to the original round-yellow and wrinkled-green

seeds, two new varieties A-D and C-B type of seeds were also obtained.

(a) What are A-B type of seeds ?

(b) State whether A and B are dominant traits or recessive traits.

(c) What are A-D type of seeds ?

(d) What are C-B type of seeds ?

(e) Out of A-B and A-D types of seeds, which one will be produced in (i) minimum numbers, and (ii) maximum numbers, in the F_2 generation ?

A. dominant

B. recessive

C. Both a and b

D. None of these

Answer: A



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11. A person first crossed pure-bred pea plants having round-yellow seeds with pure-bred pea plants having wrinkled-green seeds and found that only A-B type of seeds were produced in

the F_1 generation. When F_1 generation pea plants having A-B type of seeds were cross-bred by self-pollination, then in addition to the original round-yellow and wrinkled-green seeds, two new varieties A-D and C-B type of seeds were also obtained.

What are A-D type of seeds and What are C-B type of seeds respectively?

A. Round green and wrinkled yellow
respectively

B. Round yellow and wrinkled green

respectively

C. Wrinkled green and round green

respectively

D. Wrinkled green and round yellow

respectively

Answer: A



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12. A person first crossed pure-bred pea plants having round-yellow seeds with pure-bred pea plants having wrinkled-green seeds and found that only A-B type of seeds were produced in the F_1 generation. When F_1 generation pea plants having A-B type of seeds were cross-bred by self-pollination, then in addition to the original round-yellow and wrinkled-green seeds, two new varieties A-D and C-B type of seeds were also obtained.

Out of A-B and A-D types of seeds, which one

will be produced in (i) minimum numbers, and
(ii) maximum numbers, in the F_2 generation ?

- A. A-B and C-D respectively
- B. A-D and C-B respectively
- C. C-D and A-B respectively
- D. None of these

Answer: C



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13. Seema crossed pure breed pea plants having round-yellow seeds with wrinkled green seeds and found that only A-B type of seeds were produced in the F_1 generation. When F_1 generation pea plants having A-B type of seeds were cross-breed oy self pollination, then in addition to the original found yellow and wrinkled green seeds, two new varieties A-D and C-B types of seeds were also obtained.

The above cross is known as

A. Monohybrid cross

B. Dihybrid cross

C. Test cross

D. Back cross

Answer: B



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Multiple Choice Questions

1. What according to Mendel , was responsible for the inheritance of specific traits ?

A. Genes

B. Factors

C. Chromosomes

D. DNA

Answer: B



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2. What branch of biology focuses on the study of patterns of inheritance ?

A. Genetics

B. Immunology

C. Evolution

D. Ecology

Answer: A



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3. What determines the differences between the progeny and parents ?

A. Inheritance

B. Heritage

C. Genetics

D. Variation

Answer: D



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4. The phenomenon where individuals of a species exhibit differences in characteristics are called :

A. Adaptation

B. Evolution

C. Variation

D. All of these

Answer: C



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5. Which of the following statement is incorrect ?

A. Gene is sequence of nucleotides

B. During the process of gene expression

,DNA is first copied into RNA

C. Genes can acquire mutations in their
sequence.

D. Genes can acquire mutations in their
sequence.

Answer: D



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6. Which part of the DNA provides information for a protein ?

A. Chromosome

B. Mitochondria

C. RNA

D. Gene

Answer: D



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7. Which of the following is controlled by genes ?

A. Eye colour

B. Height

C. Hair colour

D. All of these

Answer: C



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8. The discipline of Biology that deals with the study of inheritances is

A. Cytology

B. Evolution

C. Genetics

D. Morphology

Answer: C



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9. Germinal variations are those variations which

- A. are inheritable
- B. affect only somatic cells
- C. are not inheritable
- D. None of the above

Answer: A



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10. When a gene exists in more than one form, the different forms are termed as

A. alleles

B. heterozygotes

C. genotypes

D. homozygotes

Answer: A



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11. The terms 'genotype' and 'phenotype' were coined by

A. Darwin

B. Bateson

C. Johannsen

D. Mendel

Answer: C



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12. Two pink coloured flowers on crossing resulted in 1 red , 2 pink and 1 white flower progeny .The nature of the cross will be :

A. double fertilisation

B. self pollination

C. cross fertilisation

D. no fertilisation

Answer: C



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13. Which of the following statement is true ?

A. The characteristics or traits of parents are transmitted to their progeny (offspring) through genes present on their chromosomes during the process of sexual reproduction

B. The genes which dominate other genes are called dominant genes and the

genes which get dominated are called recessive genes .

C. The progeny inherits two genes for each trait from its parent but the traits shown by the progeny depends on which inherited gene is dominant of the two .

D. All of the above

Answer: D



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14. Dominant alleles are expressed exclusively in a heterozygote ,while recessive traits are expressed only if the organism is for the recessive allele.

A. homozygous

B. heterozygous

C. normal

D. none of these

Answer: A



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15. 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



16. Select the group which shares maximum number of common characters .

- A. Two individuals of a species
- B. Two species of a genus
- C. Two genera of a family
- D. Two genera of two families

Answer: A



17. 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. Tlww

C. TtWW

D. TtWw

Answer: C



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18. A cross between a tall plant (TT) and a 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 nor governed by
gene 'T' or 't'

Answer: A



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19. The process where characteristics are transmitted from parent to offspring is called :

A. Variation

B. Heredity

C. Gene

D. Allele

Answer: A



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20. _____ is the observable set of characteristics of an organism .

A. Phenotype

B. Genes

C. DNA

D. All of these

Answer: A



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21. When a new plant is formed as a result of cross pollination from different varieties of a plant, the newly formed plant is called :

A. Dominant plant

B. Mutant plant

C. Hybrid plant

D. All of these

Answer: A



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22. Which of the following is a recessive trait in pea plants ?

A. Dwarf stem height

B. Violet flowers

C. Axial flowers

D. Inflated pods

Answer: A



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23. If you were to sample garden pea plants in Mendel's garden , which of the following statements would hold ?

- A. Round seeds were more abundant than wrinkled seeds
- B. Wrinkled seeds were more abundant than round seeds
- C. Both round and wrinkled seeds were equally abundant
- D. Answer depends on the time of day when sampling is done .

Answer: A



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24. Which of the following can be inherited from parents to offspring ?

A. Swimming technique

B. Big nose

C. Sculpted body

D. All of the above

Answer: B



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25. Which of the following is an example of genetic variation ?

A. One person has a scar but his friend does not .

B. One person is older than the other

C. Reeta eats meat but her sister Geeta is a vegetarian

D. Two children have different eye colour .

Answer: D



26. In peas ,a pure tall (TT) is crossed with a pure short plant (tt) .The ratio of pure tall plants to pure short plants in F_2 generation is :

A. 1:3

B. 3:1

C. 1:1

D. 2:1

Answer: C



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27. Humans have two different sex chromosomes, X and Y. Based on Mendel's laws, a male offspring will inherit which combination of chromosomes?

A. Both the X chromosomes from one of its parents

B. Both the Y chromosomes from one of its parents

C. Combination of X chromosomes from either of its parents

D. Combination of X and Y chromosome from either of its parents

Answer: D



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28. Two pea plant one with round green seeds (Rryy) and another with wrinkled yellow (rrYY) seeds produce F_1 progeny that have round yellow (RrYy) seeds. When F_1 plants are self pollinated , the F_2 progeny will have a new combination from the following.

(i) Round,yellow (ii) Round,green (iii) Wrinkled ,yellow (iv) Wrinkled ,green

A. (i) and (ii)

B. (i)and (iv)

C. (ii) and (iii)

D. (i) and (iii)

Answer: B



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29. If Mendel would have carried out cross pollination of a pea plant having tt trait with pea plant having TT trait then the F_1 progeny would have been ?

A. Two dwarf and Two tall plant

B. One dwarf and three tall plant

C. All tall

D. All dwarf

Answer: A



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30. Mendel conducted his experiments with

A. chick pea

B. garden pea

C. wild pea

D. pigeon pea

Answer: B



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31. A pea plant with round and green seeds (RRyy) is crossed .What would be the nature of seeds in the first generation (F1 generation).

A. Round green

B. Wrinkled green

C. Wrinkled yellow

D. Round yellow

Answer: D



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32. A group of laboratory mice having tails are bred together and their progeny is studied .The progeny had tails . However, the scientist removed the tails surgically and again bred

them for four successive generations .In your opinion , what would be the nature of the new progeny ?

A. All mice born will have tails

B. All mice born have no tails

C. The ratio of tailness to the mice will be

1 : 3

D. The ratio of tailness mice will be 1 : 4

Answer: A



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33. When a cross is made between two parents with respect to a single character , it is called a

- A. dihybrid cross
- B. monohybrid cross
- C. trihybrid cross
- D. None of these

Answer: B



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34. The genotype of the offspring formed from the cross depicted as $Tt \times tt$ will be

A. TT and tt

B. Tt and tt

C. Only tt

D. Only TT

Answer: B



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35. Which of the following statements is not true with respect to variations ?

A. All variations in a species have equal chances of survival

B. Change in genetic composition results in variation

C. Selection of variants by environmental factors forms the basis of evolutionary processes

D. Variation is minimum in asexual reproduction .

Answer: A



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36. According to Mendel , the genotypic ratio of F₂ generation in a monohybrid cross is

A. 3 : 1

B. 9 : 3 : 3 : 1

C. 1:1

D. 1:2:1

Answer: D



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37. Recessive genes can be expressed only in

A. homozygous condition

B. heterozygous condition

C. Both of the above conditions

D. None of the above conditions

Answer: A



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38. Given the above information ,what is expected phenotypic ratio of plants with different flower colours in F₂?

A. All plants will be with red flowers

B. Red: White flowers will be in the ratio of

3:1

C. Pink : White flowers will be in the ratio of

3:1

D. Red :Pink : White flowers will be in the

ratio of 1:2:1

Answer: B



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39. The sex of the child depends on the chromosomes present in the

A. egg of the female

B. sperm of the male

C. Both (a) and (b)

D. None of these

Answer: B



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40. Which of the following conditions of the zygote would lead to the birth of the normal human female child ?

- A. Two X chromosomes
- B. Only one Y chromosome
- C. Only one X chromosome
- D. One X and one Y chromosome

Answer: A



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41. In humans ,sex determination is controlled by

- A. allosomes
- B. autosomes
- C. temperature
- D. All of the above

Answer: A



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42. In humans, the sex Chromosomes comprises one pair of the total of 23 pairs of chromosomes .The other 22 pairs of chromosome are called :

- A. autosomes
- B. chromosomes
- C. meiosis
- D. all of these

Answer: A



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43. The number of pairs of sex chromosomes in the zygote of humans is :

A. 1

B. 2

C. 3

D. 4

Answer: A



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44. In human males all the chromosomes are paired perfectly except one . These unpaired chromosomes are :

- (i) Large chromosome (ii) Small chromosome
- (iii) Y-chromosome (iv) X-chromosome .

A. (i),(ii)

B. (iii)only

C. (iii),(iv)

D. (ii),(iv)

Answer: A



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45. Which chromosomes do not play any role in the determination of the sex of an individual ?

- A. Autosomes
- B. Metacentric chromosomes
- C. Acrocentric chromosomes
- D. None of the above

Answer: C



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46. The two versions of a trait which are brought in by the male and female gametes are situated on :

- A. copies of the same chromosome
- B. two different chromosomes
- C. sex chromosomes
- D. any chromosomes

Answer: A



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47. In human males , all the chromosomes are paired perfectly except one . This/these unpaired chromosome is/are

(i)

(ii) small chromosomes

(iii) Y-chromosome

(iv) X-chromosome

A. (i) and (ii)

B. (iii)only

C. (iii)and (iv)

D. (ii) and (iv)

Answer: C



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48. 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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49. 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 child

D. either boy or girl

Answer: B



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Assertion And Reasoning Based Questions

1. Assertion :Changes in non - reproductive tissues can be passed on the DNA of the germ cells .

Reason :Inherited traits include the traits developed during the lifetime of an individual that cannot be passed on the its progeny .

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true , but reason is not the correct

explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: D



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2. Reason :It is represented by capital letter ,
e.g., T.

Assertion : Variations are seen in offspring
produced by sexual reproduction .

Reason :DNA molecule generated by replication is not exactly identical to original DNA.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true , but reason is not the correct explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: D



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3. Reason : Genotype is the type of hereditary properties of an organism .

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true ,
but reason is not the correct
explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: B



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4. Reason : Acquired traits are not inherited .

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true , but reason is not the correct explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: A



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5. Assertion :Dominant allele is an allele whose phenotype expresses even in the presence of another allele of that gene .

Reason :It is represented by a capital letter ,e.g. T.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true ,
but reason is not the correct
explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: B



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6. Assertion : Mendel was successful in his hybridisation experiments .

Reason : Garden pea proved as an ideal experimental material .

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true , but reason is not the correct explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: A



[View Text Solution](#)

7. Assertion : Dominant allele is an allele whose phenotype expresses even in the presence of another allele of that gene .

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true , but reason is not the correct explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: B



[View Text Solution](#)

8. Assertion : Chromosomes are capable of self-reproduction and maintaining morphological and physiological properties through successive generations .

Reason : Chromosomes are capable of self reproduction and maintaning morphological and physiological properties through successive generations .

A. If both assertion and reason are true and reason is the correct explanation of

assertion.

B. If both assertion and reason are true ,
but reason is not the correct
explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: A



View Text Solution

9. Assertion :Mendel selected the pea plant for his experiments .

Reason : Pea plant is cross - pollinating and has unisexual flowers .

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true , but reason is not the correct explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: A



View Text Solution

10. Assertion : Mendel self-crossed F_1 yellow with round seeds to obtain F_2 generation .

Reason : F_1 prgeny of a yellow with round seeds and a green with wrinkled seeds . s

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true , but reason is not the correct explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: C



View Text Solution

11. Assertion : A geneticist crossed two pea plants got 50 % tall and 50 % dwarf in the progeny .

Reason : One plants was heterozygous tall and the other was dwarf .

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true ,
but reason is not the correct
explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: A



View Text Solution

12. Assertion :The law of independent assortment can be studied by means of dihybrid cross.

Reason :The law of independent assortment is applicable only to linked genes .

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true , but reason is not the correct

explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: C



View Text Solution

13. Assertion : The sex of the children will be determined by chromosome received from the father .

Reason : A human male has one X and one Y chromosome .

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true , but reason is not the correct explanation of assertion.

C. If assertion is true , but reason is false .

D. If assertion is false , but reason is true .

Answer: A



View Text Solution

Case Based Questions

1. Read the passage carefully and answer the following questions

If a child inherits X - chromosome from the father will be a girl and one who inherits a Y - chromosome will be a boy .Thus , both assertion and reason are true and reason is

the correct explanation of assertion .

Read the passage carefully and answer the following questions .

Heredity is the passing on of some specific characteristics from one generation to the next, from parent to offspring. The traits are passed on by genes in our DNA .A gene gives instructions about making a certain protein to determine a trait for the person like the colour of eyes or hair .The genes are located inside a DNA molecule which is a material found in chromosomes .Genes may be dominant or recessive .

What was the model organism used by Mendel to give the laws of inheritance ?

A. Garden peas

B. Wild peas

C. basket peas

D. Bottle gourd

Answer: A



View Text Solution

2. Read the passage carefully and answer the following questions

If a child inherits X - chromosome from the father will be a girl and one who inherits a Y - chromosome will be a boy .Thus , both assertion and reason are true and reason is the correct explanation of assertion .

Read the passage carefully and answer the following questions .

Heredity is the passing on of some specific characteristics from one generation to the next, from parent to offspring. The traits are

passed on by genes in our DNA .A gene gives instructions about making a certain protein to determine a trait for the person like the colour of eyes or hair .The genes are located inside a DNA molecule which is a material found in chromosomes .Genes may be dominant or recessive .

What was the model organism used by Mendel to give the laws of inheritance ?

A. girl

B. boy

C. either boy or girl

D. X - chromosome does not influence the sex of a child .

Answer: A



View Text Solution

3. Read the passage carefully and answer the following questions

If a child inherits X - chromosome from the father will be a girl and one who inherits a Y - chromosome will be a boy .Thus , both

assertion and reason are true and reason is the correct explanation of assertion .

Read the passage carefully and answer the following questions .

Heredity is the passing on of some specific characteristics from one generation to the next, from parent to offspring. The traits are passed on by genes in our DNA .A gene gives instructions about making a certain protein to determine a trait for the person like the colour of eyes or hair .The genes are located inside a DNA molecule which is a material found in chromosomes .Genes may be dominant or

recessive .

What was the model organism used by Mendel to give the laws of inheritance ?

A. dominant

B. recessive

C. gene

D. Allele

Answer: A



View Text Solution

4. Read the passage carefully and answer the following questions

If a child inherits X - chromosome from the father will be a girl and one who inherits a Y - chromosome will be a boy .Thus , both assertion and reason are true and reason is the correct explanation of assertion .

Read the passage carefully and answer the following questions .

Heredity is the passing on of some specific characteristics from one generation to the next, from parent to offspring. The traits are

passed on by genes in our DNA .A gene gives instructions about making a certain protein to determine a trait for the person like the colour of eyes or hair .The genes are located inside a DNA molecule which is a material found in chromosomes .Genes may be dominant or recessive .

What was the model organism used by Mendel to give the laws of inheritance ?

A. Genetics

B. Evolution

C. Offspring analysis

D. Genetical analysis

Answer: A



View Text Solution

5. Read the passage carefully and answer the following questions

If a child inherits X - chromosome from the father will be a girl and one who inherits a Y - chromosome will be a boy .Thus , both assertion and reason are true and reason is

the correct explanation of assertion .

Read the passage carefully and answer the following questions .

Heredity is the passing on of some specific characteristics from one generation to the next, from parent to offspring. The traits are passed on by genes in our DNA .A gene gives instructions about making a certain protein to determine a trait for the person like the colour of eyes or hair .The genes are located inside a DNA molecule which is a material found in chromosomes .Genes may be dominant or recessive .

What was the model organism used by Mendel to give the laws of inheritance ?

A. dominant

B. recessive

C. recession

D. Allele

Answer: B



View Text Solution

6. Read the passage carefully and answer the following questions

The study of heredity is called genetics .Traits are characteristics such as hair colour ,eye colour , artistic or athletic ,height and more .Every living organism , plant , or animal , receives its characteristics or traits from its parents .In plants these traits may include seed colour ,flower position , length of stem , and much more . The first person to discover of stem , and much more . The first person to discover this passing of traits was a scientist

named Gregor Mendel . He is considered as the father of genetics .He studied pea plants and discovered that certain traits were passed on, or inherited from parent to offspring .

Pure -breed pea plant A is crossed with pure -breed pea plant B . It is found that the plants which look like A do not appear in F_1 generation but re-emerge in F_2 generation .Which of the plants A and B are tall and dwarf ?

A. A are tall and B are dwarf

B. A are tall and B are also dwarf

C. A are dwarf and B are also dwarf

D. A are dwarf and B are tall .

Answer: D



View Text Solution

7. Read the passage carefully and answer the following questions

The study of heredity is called genetics .Traits are characteristics such as hair colour ,eye colour , artistic or athletic ,height and more

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In humans if gene B gives brown eyes and

gene b gives blue eyes , what will be the colour of eyes of the persons having combinations ?

- A. (i) Blue and (ii) Brown
- B. (i) Brown and (ii) Blue
- C. (i) Brown and (ii) Brown
- D. (i) Blue and(ii) Blue

Answer: C



View Text Solution

8. Read the passage carefully and answer the following questions

The study of heredity is called genetics .Traits are characteristics such as hair colour ,eye colour , artistic or athletic ,height and more .Every living organism , plant , or animal , receives its characteristics or traits from its parents .In plants these traits may include seed colour ,flower position , length of stem , and much more . The first person to discover of stem , and much more . The first person to discover this passing of traits was a scientist

named Gregor Mendel . He is considered as the father of genetics .He studied pea plants and discovered that certain traits were passed on, or inherited from parent to offspring .

If a round , green seeded pea plant ($RRyy$) is crossed with a wrinkled yellow seeded pea plant ($rrYY$) , the seeds produced in F_1 generation are :

- A. round and green
- B. round and yellow
- C. wrinkled and green

D. wrinkled and yellow

Answer: B



View Text Solution

9. Read the passage carefully and answer the following questions

The study of heredity is called genetics .Traits are characteristics such as hair colour ,eye colour , artistic or athletic ,height and more .Every living organism , plant , or animal ,

receives its characteristics or traits from its parents .In plants these traits may include seed colour ,flower position , length of stem , and much more . The first person to discover of stem , and much more . The first person to discover this passing of traits was a scientist named gregor Mendel . He is considered as the father of genetis .He studied pea plants and discovered that certain traits were passed on, or inherited from parent to ofspring .

A cross between two individuals results in a ratio of 9: 3: 3: 1 for four possible phenotypes of progeny . This is an example of a :

A. Monohybrid cross

B. Dihybrid cross

C. Test cross

D. F_1 generation

Answer: B



View Text Solution

10. Read the passage carefully and answer the following questions

The study of heredity is called genetics .Traits

are characteristics such as hair colour ,eye colour , artistic or athletic ,height and more .Every living organism , plant , or animal , receives its characteristics or traits from its parents .In plants these traits may include seed colour ,flower position , length of stem , and much more . The first person to discover of stem , and much more . The first person to discover this passing of traits was a scientist named gregor Mendel . He is considered as the father of genetis .He studied pea plants and discovered that certain traits were passed on, or inherited from parent to ofspring .

A man with blood group A marries a woman having blood group of the child ?

A. O only

B. A only

C. AB

D. Equal chance of acquiring blood group A or blood group O

Answer: D



View Text Solution

11. Read the following and answer the following question

Gregor Johann Mendel is known as a "father of modern genetics" for his work in the field of genetics. He gave three laws of inheritance followed as Law of dominance, Law of segregation and Law of independent assortment. He conducted his experiment on garden pea plants having contrasting characteristics. He performed self-pollination and cross-pollination to understand the inheritance patterns of traits.

After cross -fertilisation of true -breeding tall and dwarf plants ,the F1 generation was self fertilised .The resultant plants have genotypes in the ratio :

A. 1: 2: 1 (homozygous tall : heterozygous tall dwarf)

B. 1: 2: 1 (heterozygous tall : homozygous tall : dwarf)

C. 3: 1 (tall : dwarf)

D. 3: 1(dwarf:tall)

Answer: A



View Text Solution

12. Read the following and answer the following question

Gregor Johann Mendel is known as a "father of modern genetics" for his work in the field of genetics. He gave three laws of inheritance followed as Law of dominance, Law of segregation and Law of independent assortment. He conducted his experiment on

garden pea plants having contrasting characteristics .He performed self - pollination and cross -pollination to understand the inheritance patterns of traits .

Which of the following characteristics of pea plants was not used by Mendel in his experiments ?

- A. Seed colour
- B. Seed shape
- C. Pod length
- D. Flower position

Answer: C



View Text Solution

13. Read the following and answer the following question

Gregor Johann Mendel is known as a "father of modern genetics" for his work in the field of genetics. He gave three laws of inheritance followed as Law of dominance, Law of segregation and Law of independent assortment. He conducted his experiment on

garden pea plants having contrasting characteristics .He performed self - pollination and cross -pollination to understand the inheritance patterns of traits .

Mendel _____ contrasting characteristics of pea plants .

A. eight

B. seven

C. six

D. five

Answer: B



[View Text Solution](#)

14. Read the following and answer the following question

Gregor Johann Mendel is known as a "father of modern genetics" for his work in the field of genetics. He gave three laws of inheritance followed as Law of dominance, Law of segregation and Law of independent assortment. He conducted his experiment on garden pea plants having contrasting characteristics. He performed self-pollination

and cross -pollination to understand the inheritance patterns of traits .

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



View Text Solution

15. Read the following and answer the following question

Gregor Johann Mendel is known as a "father of modern genetics" for his work in the field of genetics. He gave three laws of inheritance followed as Law of dominance, Law of segregation and Law of independent assortment. He conducted his experiment on garden pea plants having contrasting characteristics. He performed self-pollination and cross-pollination to understand the

inheritance patterns of traits .

Test cross determines :

A. whether two traits are linked or not

B. the genotype of F_2 plant .

C. whether the two species will breed
successfully or not .

D. number of alleles in a gene .

Answer: B



View Text Solution

16. Read the passage carefully and answer the following questions.

Gregor Mendel in 1865, paved the way for the analysis of the underlying genetic basis of traits by setting out to understand the principles of heredity . As per Darwin's observations , in nearly all populations individuals observations , in nearly all populations individuals tend to produce far more offspring than are needed to replace the parents .He also observed that it is very rare for any two individuals to be exactly alike . All

the natural variations among individuals lead to natural variations among individuals lead to natural selection .Individuals to be exactly alike . All the natural variations among individuals born with variations that present an advantage in obtaining resources or mates have greater chances of living and reproducing offspring who would inherit and carry forward the favourable variations .At the same time , individuals with different variations might be less likely to reproduce .

WW, Vv and vv are _____ while violet and white are _____.

A. genotypes , phenotypes

B. phenotypes , genotypes

C. genotypes,genotypes

D. phenotypes,phenotypes

Answer: A



View Text Solution

17. Read the passage carefully and answer the following questions.

Gregor Mendel in 1865, paved the way for the

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individuals born with variations that present an advantage in obtaining resources or mates have greater chances of living and reproducing offspring who would inherit and carry forward the favourable variations .At the same time , individuals with different variations might be less likely to reproduce .

Which one of the following traits is most likely to pass from one generation to other ?

A. Artificial hair coloured by a mother during pregnancy .

B. Acquired skills by a father

C. Brown eye colour .

D. Six fingers in right hand of a person

Answer: C



View Text Solution

18. Read the passage carefully and answer the following questions.

Gregor Mendel in 1865, paved the way for the analysis of the underlying genetic basis of traits by setting out to understand the

principles of heredity . As per Darwin's observations , in nearly all populations individuals observations , in nearly all populations individuals tend to produce far more offspring than are needed to replace the parents .He also observed that it is very rare for any two individuals to be exactly alike . All the natural variations among individuals lead to natural variations among individuals lead to natural selection .Individuals to be exactly alike . All the natural variations among individuals born with variations that present an advantage in obtaining resources or mates

have greater chances of living and reproducing offspring who would inherit and carry forward the favourable variations .At the same time , individuals with different variations might be less likely to reproduce .

_____ is simply the generation of diversity and the shaping of the diversity by environmental selection .

A. Evolution

B. Speciation

C. Heredity

D. Natural selection

Answer: A



View Text Solution

19. Read the passage carefully and answer the following questions.

Gregor Mendel in 1865, paved the way for the analysis of the underlying genetic basis of traits by setting out to understand the principles of heredity . As per Darwin's

observations , in nearly all populations individuals observations , in nearly all populations individuals tend to produce far more offspring than are needed to replace the parents .He also observed that it is very rare for any two individuals to be exactly alike . All the natural variations among individuals lead to natural variations among individuals lead to natural selection .Individuals to be exactly alike . All the natural variations among individuals born with variations that present an advantage in obtaining resources or mates have greater chances of living and

reproducing offspring who would inherit and carry forward the favourable variations .At the same time , individuals with different variations might be less likely to reproduce .

Which one of the following statements is not true ?

A. Excavating ,time -dating ,studying fossils ,and determining DNA sequences are tools to study evolution

B. Variations arising during the process of reproduction cannot be inherited .

C. Variations in the species may confer survival advantages or merely contribute to the genetic drift .

D. Classification of organisms is based on tracing evolutionary relationships .

Answer: B



View Text Solution

20. Read the passage carefully and answer the following questions.

Gregor Mendel in 1865, paved the way for the analysis of the underlying genetic basis of traits by setting out to understand the principles of heredity . As per Darwin's observations , in nearly all populations individuals observations , in nearly all populations individuals tend to produce far more offspring than are needed to replace the parents .He also observed that it is very rare for any two individuals to be exactly alike . All

the natural variations among individuals lead to natural variations among individuals lead to natural selection .Individuals to be exactly alike . All the natural variations among individuals born with variations that present an advantage in obtaining resources or mates have greater chances of living and reproducing offspring who would inherit and carry forward the favourable variations .At the same time , individuals with different variations might be less likely to reproduce .

Frequency of certain _____ in a population

changes over generations to bring about evolution .

A. members

B. progenies

C. genes

D. ideas

Answer: C



View Text Solution

21. Read the passage carefully and answer the following questions .

Inheritance is the acquiring of genetic characteristics or traits from parents by their offspring .In humans , both parents equally contribute to the inheritance of traits . In 1860 .Gregor Mendel studied the rules of inheritance of traits . He conducted an experiment on pea plants for the same .He cultivated pea plants and observed their pattern of inheritance from one generation to the next generation .this observation resulted

in the discovery of three laws of inheritance ,famously known as Mendel's laws of Inheritance .

_____ is the observable set of characteristics of an organism .

A. Phenotype

B. Genes

C. DNA

D. All of these

Answer: A



22. Read the passage carefully and answer the following questions .

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pattern of inheritance from one generation to the next generation .this obervation resulted in the discovery of three laws of inheritance ,famously known as Mendel's laws of Inheritance .

Select the statements that escribe characteristics of genes :

(A) Genes are specific sequence of bases in a aDNA molecule .

(B) A gene does not code for proteins .

(C) In individuals of a given species , a specific gene is located on a particular chromosome .

(D) Each chromosome has only one gene .

A. (A),(B)

B. (A),(C)

C. (A),(D)

D. (B),(D)

Answer: B



View Text Solution

23. Read the passage carefully and answer the following questions .

Inheritance is the acquiring of genetic

characteristics or traits from parents by their offspring. In humans, both parents equally contribute to the inheritance of traits. In 1860, Gregor Mendel studied the rules of inheritance of traits. He conducted an experiment on pea plants for the same. He cultivated pea plants and observed their pattern of inheritance from one generation to the next generation. This observation resulted in the discovery of three laws of inheritance, famously known as Mendel's laws of Inheritance.

A group of moths, some brown and some

green lived in a grassland having dry bushes and dry grass . This phenomenon is called :

- A. Variation
- B. Natural selection
- C. Mutations
- D. None of them

Answer: B



View Text Solution

24. Read the passage carefully and answer the following questions .

Inheritance is the acquiring of genetic characteristics or traits from parents by their offspring .In humans , both parents equally contribute to the inheritance of traits . In 1860 .Gregor Mendel studied the rules of inheritance of traits . He conducted an experiment on pea plants for the same .He cultivated pea plants and observed their pattern of inheritance from one generation to the next generation .this observation resulted

in the discovery of three laws of inheritance ,famously known as Mendel's laws of Inheritance .

The two versions of a trait which are brought in by the male and female gametes are situated on :

- A. copies of the same chromosome
- B. two different chromosomes
- C. sex chromosomes
- D. any chromosomes

Answer: A



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25. Read the passage carefully and answer the following questions .

Inheritance is the acquiring of genetic characteristics or traits from parents by their offspring .In humans , both parents equally contribute to the inheritance of traits . In 1860 .Gregor Mendel studied the rules of inheritance of traits . He conducted an experiment on pea plants for the same .He cultivated pea plants and observed their

pattern of inheritance from one generation to the next generation .this obervation resulted in the discovery of three laws of inheritance ,famously known as Mendel's laws of Inheritance .

If a round ,green seeded pea plant ($RRyy$) is crossed with wrinkled , yellow seeded pea plant ($rrYY$) ,the seeds produced in F1 generation are :

- A. round and yellow
- B. round and green
- C. wrinkled and green

D. wrinkled and yellow

Answer: A



View Text Solution

26. Read the passage carefully and answer the following question

A genetic disorder is an inherited medical condition . It can be passed from parents to their children . Examples include cystic fibrosis , sickle cell disease an haemophilia .

Parents who are heterozygous for these conditions are called carriers. They do not usually have the disorder themselves. This is shown in this Punnett square for cystic fibrosis.

An individual who is homozygous (cc) with the recessive allele will develop cystic fibrosis.



State the probability percentage of children
Without cystic fibrosis

A. 0.75

B. 0.25

C. 0.1

D. 0.05

Answer: A



View Text Solution

27. Read the passage carefully and answer the following question

A genetic disorder is an inherited medical condition . It can be passed from parents to their children . Examples include cystic fibrosis

, sickle cell disease and haemophilia .

Parents who are heterozygous for these conditions are called carriers .They do not usually have the disorder themselves .This is shown in this Punnett square for cystic fibrosis .

An individual who is homozygous (cc) with the recessive allele will develop cystic fibrosis.



State the probability percentage of children with cystic fibrosis .

A. 0.75

B. 0.25

C. 0.1

D. 0.05

Answer: B



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Very Short Answer Type Questions

1. How many laws were given by Mendel ?



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2. What is Law of Dominance ?



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3. What are homologous chromosome ?



[View Text Solution](#)

4. What are genes located ?



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5. What will be the blood group of an individual with genetics combination $I^A I^B$?



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6. Which is the safest blood group for donation if an accident victim of an unknown blood group has to be given immediate blood transfusion ?



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7. How can a person be normal for a trait even when carrying one defective gene for that trait ?



[View Text Solution](#)

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



[View Text Solution](#)

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



[View Text Solution](#)

10. Why are traits acquired during the lifetime of an individual not inherited ?



[View Text Solution](#)

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

 [View Text Solution](#)

12. When a black guinea pig is crossed with a white guinea pig, what coloured guinea pigs are obtained in F1 generation if black colour is dominant over white ?

 [View Text Solution](#)

13. In a cross between a tall pea plant (TT) and a short pea plant (tt), what will be the characteristics shown by the F_1 generation ?



View Text Solution

14. In a cross between round yellow seeds (RrYy) and wrinkled green seeds (rryy) of pea plant, what is the ratio of plants obtained in F_2 generation ?



View Text Solution

15. In turtle ,high incubation temperature leads to the development of female offspring .On the other hand in lizards ,high incubation temperature leads to the development of male offspring.What determines the sex of the offspring in these example ?



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16. All the variation is a species do not have equal chances of survival .Why ?





[View Text Solution](#)

17. How do the variations in a species promote survival ?



[View Text Solution](#)

18. A Mendelian experiment consisted of breeding pea plants bearing violet flowers with pea plants bearing white flowers. What will be the result in F_1 progeny ?



[View Text Solution](#)

19. Give the respective scientist terms used for studying :



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20. What is a recessive trait ?



View Text Solution

21. A Mendelian experiment consisted of breeding pea plants bearing violet flowers with pea plant bearing whit flowers .What will be the result in F_1 progeny ?



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22. Give any two examples where sex determination is regulated by environmental factors ?



[View Text Solution](#)

23. What will be the sex of a child who inherits Y chromosome from his or her father?



View Text Solution

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



View Text Solution

25. How many pairs of chromosomes are autosomes ?



View Text Solution

26. Why Pre - natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act , 1994 , was enacted ?



View Text Solution

27. Discuss the types of egg and sperm in reference to X and Y chromosome .



View Text Solution

28. If Y bearing sperm fuses with the egg what will be the sex of the child ? Also state the chromosome constitution .



View Text Solution

29. How many X chromosome can be found in the cells of the body of (i) a boy , and (ii) a girl .



View Text Solution

30. If a X bearing sperm fuses with an egg ,what will be the sex of the individual developing from the zygote ?



View Text Solution

1. Give reason why acquired characters are not inherited ?

 [View Text Solution](#)

2. Why do all the gametes formed in human female have an X-chromosome ?

 [View Text Solution](#)

1. How can variation occur in asexually reproducing organisms ?



[View Text Solution](#)

2. What are mutations ? Can mutation be inherited ?



[View Text Solution](#)

3. State the observation of Mendel on self - pollination of first generation plants .



[View Text Solution](#)

4. Which is a small section of DNA that is the genetic code for a characteristic ?



[View Text Solution](#)

5. Here are the three possible genotypes for hair length in cats . Complete the table below .Remember short hair is dominant .



 [View Text Solution](#)

6. Wil all organisms from a cross between two homozygous dominant organisms would have the same phenotype ?

 [View Text Solution](#)

7. What proportion of offspring from $BB \times Bb$ would be BB ?



[View Text Solution](#)

8. What proportion of offspring from $Cc \times Cc$ would be cc ?



[View Text Solution](#)

9. What proportion of offspring from $tt \times Tt$ would be tt ?



[View Text Solution](#)

10. What proportion of offspring from two homozygous recessive organisms would be homozygous recessive ?



[View Text Solution](#)

11. Complete the square below for two heterozygous short-haired cats. Work out the probability percentage of genotype and phenotype of the offspring of genotype and phenotype of the offspring remember short hair (H) is dominant.



[View Text Solution](#)

12. Characteristics in an individual organism are caused by both genetic and environmental variation. Complete the table below stating whether the characteristic is genetic or environmental variation.



 [View Text Solution](#)

13. A study found that children with light coloured eyes are likely to have parents with

light - coloured eyes . On the basis can we say anything about whether the light eye colour trait is dominant or recessive ? Why or why not ?



[View Text Solution](#)

14. 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 ?



[View Text Solution](#)

15. Gene controls traits. Explain this with an example ?



View Text Solution

16. How do Mendel's experiment show that traits may be dominant or recessive ?



View Text Solution

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



View Text Solution

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



View Text Solution

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



[View Text Solution](#)

20. A study found that children with light coloured eyes are likely to have prents 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 ?



[View Text Solution](#)

21. Name the plant Mendel used for his experiment .What type of progeny was obtained by Mendel in F_1 and F_2 generations when he crossed the tall and short plants ?

Write the ratio he obtained in F_2 generation plants .



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



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23. Answer the following : Who are more closely related -A brother and sister or two

cousins ?Why ?



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24. Why do all the gametes formed in human female have an X-chromosome ?



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



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26. 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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27. How is the equal genetic contribution of male and female parents ensured in the

Progeny ?



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28. How many pairs of chromosomes are present in human beings? Out of this how many are sex chromosomes ? How many types of sex chromosomes are found in human beings ?



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Long Answer Type Questions

1. Why did Mendel choose pea plants for his experiment ? Give any five reasons .



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2. Give the basic features of the mechanism of inheritance ?



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3. Give the cross between RRYy x rryy for both F1 and F2 generation ? What are the combination of characters produced in F2 generation and give reasons for appearance of new progeny ?



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4. A blue flower plant denoted by BB is crossed with that of white coloured flower plant denoted by bb .

State the colour of flower you would expect in their F_1 generation plants .



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5. A blue flower plant denoted by BB is crossed with that of white coloured flower plant denoted by bb .

What must be the percentage of white flower plants in F_2 generation if flower of F_1 plants are self-pollinated ?



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6. A blue flower plant denoted by BB is crossed with that of white coloured flower plant denoted by bb .

State the expected ratio of the genotypes BB and bb in the F_2 progeny ?



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7. How do Mendel's experiment show that the :
Traits may be dominant or recessive



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8. How do Mendel's experiment show that the :
Traits are inherited independently .

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9. Answer the following questions :

What are dominant and recessive traits ?

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10. "Is it possible that a trait is inherited but may not be expressed in the next generation ?

Give a suitable example to justify this statement .



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11. The given box diagram represents the ratio of females to males or the sex ratio in our country for 10 decades (1901 to 2001) .Answer the following questions in the light of your

knowledge of sex determination and the data presented in the box diagram .



What does the bar diagram show ?



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12. The given box diagram represents the ratio of females to males or the sex ratio in our country for 10 decades (1901 to 2001) .Answer the following questions in the light of your knowledge of sex determination and the data

presented in the box diagram .



Assign one reason to the trend showing deviation from the expected sex ratio .



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13. The given box diagram represents the ratio of females to males or the sex ratio in our country for 10 decades (1901 to 2001) .Answer the following questions in the light of your knowledge of sex determination and the data

presented in the box diagram .



Suggest a way by which such a trend can be stopped .



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14. The sex of a new child is a matter of chances and none of the parents may be considered responsible for it . Draw a flowchart showing determination of sex of a newborn to justify this statement .



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Differentiate Between

1. Difference between Recessive and Dominant Traits .



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2. List two differences between acquired traits and inherited traits by giving an example of each .



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Analysis And Evaluation Based Questions

1. Study carefully the given flowchart depicting cross between pea plant with yellow seeds and pea plant with green seeds and answer the following :

What kind cross it depicts ?



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2. Study carefully the given flowchart depicting cross between pea plant with yellow seeds and pea plant with green seeds and answer the following :

In which proportions the characters will appear in F_1 and F_2 generation ?



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3. Acquiring characteristic or traits from one generation to the other is nothing but

inheritance .Here , both parents contribute equally to the inheritance or traits. It was Gregor Mendel , known as the Father of Genetc who conducted immense research and studied this inheritance of traits .It was with his research on plan breeding that he came up with the laws of inheritance in living organisms .He conducted his experiments pea plants to show the inheritance of traits in living organisms .He observed the pattern of inheritance from one generation to the other in these plants .



Name which Mendel's experiments shows that traits are inherited independently?



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4. Acquiring characteristic or traits from one generation to the other is nothing but inheritance. Here, both parents contribute equally to the inheritance or traits. It was Gregor Mendel, known as the Father of Genetics who conducted immense research and studied this inheritance of traits. It was with

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What is observed by mendel in his experiment about te phenotype and genotype ?



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5. Acquiring characteristic or traits from one generation to the other is nothing but inheritance .Here , both parents contribute equally to the inheritance or traits. It was Gregor Mendel , known as the Father of Genetc who conducted immense research and studied this inheritance of traits .It was with his research on plan breeding that he came up with the laws of inheritance in living organisms .He conducted his experiments pea plants to show the inheritance of traits in living organisms .He observed the pattern of inheritance from one generation to the other

in these plants .



Define the term Genotype .

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6. Acquiring characteristic or traits from one generation to the other is nothing but inheritance .Here , both parents contribute equally to the inheritance or traits. It was Gregor Mendel , known as the Father of Genetc who conducted immense research and

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What do you understand by dominant alleles ?

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7. Given below is the experiment carried out by Mendel to study inheritance of two traits in garden pea .



Fill the boxes .



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8. Given below is the experiment carried out by Mendel to study inheritance of two traits in garden pea .



Why did Mendel carry experiment with two traits ?



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9. Given below is the experiment carried out by Mendel to study inheritance of two traits in garden pea .



What were his findings with respect to inheritance of traits in F_1 and F_2 generations ?



10. Observe the ears of all the students in the class .Prepare a list of students having free or attached earlobes and calculate the percentage of students having each (Fig.below) .Find out about the earlobes of the parents of each student in the class . Correlate the earlobe type of each student with that of their parents . Based on this evidence, suggest a possible rule for the inheritance of earlobe

types .



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11. In the given figure below , what experiment would we do to confirm that the F_2 generation did in fact have a 1 : 2 : 1 ratio of TT , Tt and trait combinations ?



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Partical Based Questions

1. In a monohybrid cross between tall pea plants (TT) and short pea plants (tt) a scientist obtained only tall pea plants (Tt) in the F_1 generation . However on selfing the F_1 generation pea plants he obtained both tall and short plants in F_2 generation. on the basis of above observations with other angiosperms also can the scientist arrive at a law ? If yes ,

explain the law .If not ,give justification for your answer .



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Application Based Questions

1. Guinea pig having black colour when crossed with agueina pig having same colour produced 80 offspring ,out of which 60 were black and 20 were white .Now find out :

What is the possible genotype of the guinea pigs ?



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2. Guinea pig having black colour when crossed with a guinea pig having same colour produced 80 offspring, out of which 60 were black and 20 were white. Now find out :

Which trait is dominant and which trait is recessive ?



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3. Guinea pig having black colour when crossed with a guinea pig having same colour produced 80 offspring, out of which 60 were black and 20 were white. Now find out :

What is this cross called and what is its phenotypic ratio ?



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4. A woman with blonde hair married a man with black soft hair. All of their children in first

generation had black soft hair but in next generation children had different combinations in the ratio of 9:3:3:1 .State the law that governs this expression .



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5. Mrs .Joshi an eight months pregnant lady was suggested by her doctor to get an ultrasound done . She went to a radiologist with her husband and got the ultrasound was done , her husband asked doctor about the

sex of the baby in the womb .

Is it ethical to determine the sex of the foetus

?Why ?



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6. Mrs .Joshi an eight months pregnant lady was suggested by her doctor to get an ultrasound done . She went to a radiologist with her husband and got the ultrasound was done , her husband asked doctor about the sex of the baby in the womb .

What is the chance of giving birth to a girl child in human beings ?



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7. Mrs .Joshi an eight months pregnant lady was suggested by her doctor to get an ultrasound done . She went to a radiologist with her husband and got the ultrasound was done , her husband asked doctor about the sex of the baby in the womb .

What has government done to stop female foeticides ?



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Creating Based Questions

1. Ram set with an accident .Kohn his school mate takes him to the hospital where ram (AB blood group) needs blood transfusion .John also has AB blood group and is willing to donate his blood to different community so

has different type of blood" Give your opinion about Ram's mother views.



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2. Why a mice whose tail has been removed by surgry does not produce tailness mice ?



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3. A Blue Colour Flower Plant Denoted by Bb is crossbred with that of White Colour Flower

Plant Denoted by Bb.

State the Colour of Flower You Would Expect in Their F1 Generation Plants .



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4. A Blue Colour Flower Plant Denoted by Bb is crossbred with that of White Colour Flower Plant Denoted by bb.

What must be the percentage of white flower plants in F2 generation if flowers of f1 plants are self - pollinated ?



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5. A Blue Colour Flower Plant Denoted by Bb is crossbred with that of White Colour Flower Plant Denoted by Bb.

State the expected ratio of the genotypes BB and Bb in the F₂ Progeny .



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6. With the help of two suitable examples ,explain why certain experiences and traits

earned by people during their lifetime are not passed on to their next generation .When can such traits be passed on ?



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7. Study the table given below and answer the following questions .



What is the sex determination ?



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8. Study the table given below and answer the following questions .



What are the sex chromosomes in the males ?



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9. Study the table given below and answer the following questions .





What are the sex chromosomes in the females ?



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10. Study the table given below and answer the following questions .



Is the father responsible for the sex of the child .



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11. " A brother and sister are more related to each other in comparison to the case when any one of them is related with his or her cousin". Through this statement what will we get to know about their ancestors ?



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