BIOLOGY

BOOKS - BETOPPERS

HEREDITY & EVOLUTION

Worksheet 1

1. Which of the processes, sexual reproduction or asexual reproduction, brings about maximum variations in the offsprings?

Watch Video Solution

2. 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?

Watch Video Solution

3. Mendel said that the characteristics or traits of organisms are carried from one generation

to the next by internal factors which occur in pairs. What is the modern name for these factors ?

Watch Video Solution

4. Some plants occur in one of the two sizes : tall or dwarf. This characteristic is controlled by one pair of genes. Tallness is dominant to dwarfness. Choose suitable letters for this gene pair.

Watch Video Solution

5. State whether the following statement is true or false :

The sex of an infant is not a case of inheritance of characteristics.

Watch Video Solution

6. A new born child has an XY pair of chromosomes. Will it be a baby boy or a baby girl ?

Watch Video Solution

7. what type of plants were used by Mendel for conducting his experiments on inheritance ?

Watch Video Solution

8. The gene for red hair is recessive to the gene for black hair. What will be the hair colour of a person if he inherits a gene for red hair from his mother and a gene for black hair from his father ?

Watch Video Solution

9. Fill in the following blanks with suitable words:

Genes, always work in .....

Watch Video Solution

10. Fill in the following blanks with suitable words :

(a) Genes always work in ..... .

(b) In pea plants, the gene for dwarfness is

..... Whereas that for tallness is ..... .

(c) Most people have ..... earlobes but some have ..... earlobes .

(d) A human gamete contains ..... chromosomes whereas a normal body cell has ..... chromosomes in it.

(d) All races of man have ..... blood groups .

(f) The ..... chromosomes for a ..... are XX whereas that for a ..... are XY .

Watch Video Solution

11. Fill in the following blanks with suitable words:

Most people have ..... earlobes but some have ..... earlobes.

Watch Video Solution

12. Fill in the following blanks with suitable words :

(a) Genes always work in ..... .

(b) In pea plants, the gene for dwarfness is

..... Whereas that for tallness is ..... .

(c) Most people have ..... earlobes but some have ..... earlobes .

(d) A human gamete contains ..... chromosomes whereas a normal body cell has ..... chromosomes in it.

(d) All races of man have ..... blood groups .

(f) The ..... chromosomes for a ..... are XX whereas that for a ..... are XY .

Watch Video Solution

13. Fill in the following blanks with suitable words:

All races of man have ..... blood groups.

Watch Video Solution

14. Fill in the following blanks with suitable words :

(a) Genes always work in ..... .

(b) In pea plants, the gene for dwarfness is ..... Whereas that for tallness is ..... .

(c) Most people have ..... earlobes but some have ..... earlobes .

(d) A human gamete contains ..... chromosomes whereas a normal body cell has ..... chromosomes in it.

(d) All races of man have ..... blood groups .

(f) The ..... chromosomes for a ..... are XX whereas that for a ..... are XY .

Watch Video Solution

15. Which of the following represent tall plants and which represent short plants (or dwarf plants)?

(a) Tt (b) tt (c) TT

Watch Video Solution

16. A man having blood group O marries a woman having blood group B and they have a daughter. What will be the blood group of the daughter ?

Watch Video Solution

17. In the F_2 generation of a cross, progeny having different traits are produced in the ratio 3 : 1 . State whether it is a monohybrid cross or a dihybrid cross ? Give one example of such a cross.

Watch Video Solution

18. (a) what is the genotype of dwarf plants which always produced dwarf offspring ?

(b) What is the genotype of tall plants which always produced tall offspring ?

(c) What is the genotype of (i) dwarf plants , and (ii) tall plants, whose parental cross always produces tall offspring ?

Watch Video Solution

19. (a) what is the genotype of dwarf plants which always produced dwarf offspring ?

(b) What is the genotype of tall plants which always produced tall offspring ?

(c) What is the genotype of (i) dwarf plants , and (ii) tall plants, whose parental cross always produces tall offspring ?

Watch Video Solution

20. (a) what is the genotype of dwarf plants which always produced dwarf offspring ?

(b) What is the genotype of tall plants which always produced tall offspring ?

(c) What is the genotype of (i) dwarf plants ,

and (ii) tall plants, whose parental cross always produces tall offspring ?

Watch Video Solution

21. (a) If a normal human cell has 46 chromosomes, how many chromosomes will be there in a human (i) sperm cell, and (ii) zygote ?

(b) What sizes of plants are produced if both parents have genes Tt ?

Watch Video Solution

22. (a) If a normal human cell has 46 chromosomes, how many chromosomes will be there in a human (i) sperm cell, and (ii) zygote ?

(b) What sizes of plants are produced if both parents have genes Tt ?

Watch Video Solution

23. In a human, how many chromosmes are present in :

a brain cell ?

Watch Video Solution

24. In a human, how many chromosomes are present in :

(a) a brain cell ?

(b) a sperm in the testes ?

(c) an egg which has just been produced by the ovary ?

(d) a skin cell ?

(e) a fertilised egg ?

Watch Video Solution

25. In a human, how many chromosomes are present in :

(a) a brain cell ?

(b) a sperm in the testes ?

(c) an egg which has just been produced by the ovary ?

(d) a skin cell ?

(e) a fertilised egg ?

Watch Video Solution

26. In a human, how many chromosomes are present in :

(a) a brain cell ?

(b) a sperm in the testes ?

(c) an egg which has just been produced by the ovary ?

(d) a skin cell ?

(e) a fertilised egg ?

Watch Video Solution

27. In a human, how many chromosomes are present in :

(a) a brain cell ?

(b) a sperm in the testes ?

(c) an egg which has just been produced by the ovary ?

(d) a skin cell ?

(e) a fertilised egg ?

Watch Video Solution

28. Mendel said that the characteristics or traits of organisms are carried from one generation to the next by internal factors which occur in pairs. What is the modern name for these factors ?

Watch Video Solution

29. Gregor Mendel's first law of genetics states "Of a pair of contrasted characters, olny one can be represented in a gamete by its internal

'factor'.

(b) State where these factors are found in gametes.

Watch Video Solution

30. Does genetic combination of mother play a significant role in determining the of a new born baby ?

Watch Video Solution

31. Given the pair of contrasting traits of the following characters in pea plants and mention which is dominant and recessive .

(i) yellow seed (ii) round seed.

Watch Video Solution

32. Given the pair of contrasting traits of the following characters in pea plants and mention which is dominant and recessive .

(i) yellow seed (ii) round seed.

Watch Video Solution

33. When two parents are crossed , the offspring are referred to as :

A. recessives

B. test cross

C. F_2generation

D. F_2 generation

Answer:

Watch Video Solution

34. 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. dihybrid cross

B. monohybrid cross

C. test cross

D. none of these

Answer:

Watch Video Solution

35. For his experiments on heredity, Mendel used :

A. papaya plants

B. potato plants

C. pea plants

D. pear plants

Answer:

Watch Video Solution

Watch Video Solution

36. The human animal which has an XY pair of chromosomes is called :

A. male

B. hybrid

C. female

D. doomed

Answer:

Watch Video Solution

37. The science of heredity is known as :

A. biology

B. embryology

C. genetics

D. biochemistry

Answer:

Watch Video Solution

38. A gene is a :

A. hybrid

B. heritable trait

C. pure breed

D. part of a chromosome that transmits a trait

Answer:

Watch Video Solution

39. A normal cell of human body contains 23 pairs of chromosomes. The number of chromosomes in a sex cell (sperm or ovum) of a human being is most likely to be :

A. 46

B. 23

C. 21

D. 42

Answer:

Watch Video Solution

Watch video solution

40. In order to ensure that he had pure-breeding plants for his experiments, Mendel :

A. cross-fertilised each variety with each other

B. let each variety self fertilise for several generations

C. removed the female parts of the plants

D. removed the male parts of the plants

Answer:

Watch Video Solution

41. In the human blood grouping, the four basic blood types are type A, typeB, typeAB, and type O. The blood proteins A and B are :

A. simple dominant and recessive traits

B. incomplete dominant traits

C. codominant traits

D. sex-linked traits

Answer:

Watch Video Solution

42. A plant with two 'small' genes breeds with a plant with two 'tall' genes to produce :

A. small plants and tall plants in the ratio 1:3

B. all small plants

C. all tall plants

D. tall plants and small plants in the ratio 3:1

Answer:

Watch Video Solution

43. A pregnant woman has an equal chance of her baby being blood group A or blood group AB. Which one of the following shows the possible genotypes of the woman and the father of her child ?

A. $I^A I^A$ and $I^B I^o$

B. $I^A I^B$ and $I^B I^o$

C. $I^A I^o$ and $I^B I^o$

D. $I^A I^B$ and $I^A I^0$

Answer:

Watch Video Solution

44. The palisade cells of a species of plants contain 28 chromosomes. How many

chromosomes will there be in each gamete produced by the plant ?

A. 56

B. 28

C. 14

D. 4

Answer:

Watch Video Solution

45. The sex of a child is determined by which of the following ?

A. the length of the mother's pregnancy

B. the length of time between ovulation and copulation

C. the presence of an X chromosome in an ovum

D. the presence of a Y chromosome in a sperm

Answer:

Watch Video Solution

46. A zygote which has inherited an X chromosome from the father will develop into :

A. baby boy

B. baby girl

C. adult

D. either boy or girl

Answer:

Watch Video Solution

47. 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 protein there is a gene

Answer: A

Watch Video Solution

48. If the ratio of each phenotype of the seeds of pea plants in the F_2 generation is 9 : 3 : 3 : 1, it is known as :

A. tetrahybrid ratio

B. monohybrid ratio

C. dihybrid ratio

D. trihybrid ratio

Answer:

Watch Video Solution

49. 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 the following combination of genes ?

(a) Bb (b) bb (c) BB

A. Bb

B. bb

C. BB

D. None of thse

Answer:

Watch Video Solution

50. Pure-bred pea plants A are crossed with pure-bred pea plants 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 : (i) tall, and (ii) dwarf ? Give reason for your answer .

Watch Video Solution

51. Pure-breed tall pea plants are first crossed with pure-bred dwarf pea plants. The pea plants obtained in F_1 generation are then cross-bred to produce F_2 generation of pea plants.

(i) What do the plants of F_1 generation look

like ?

(b) What is the ratio of all plants to dwarf plants in F_2 generation ?

(c) Which type of plants were missing in F_1 generation but reappeared in F_2 generation ?

Watch Video Solution

52. Pure-breed tall pea plants are first crossed with pure-bred dwarf pea plants. The pea plants obtained in F_1 generation are then cross-bred to produce F_2 generation of pea

plants.

(i) What do the plants of F_1 generation look like ?

(b) What is the ratio of all plants to dwarf plants in F_2 generation ?

(c) Which type of plants were missing in F_1 generation but reappeared in F_2 generation ?

Watch Video Solution

53. Pure-breed tall pea plants are first crossed with pure-bred dwarf pea plants. The pea

plants obtained in F_1 generation are then cross-bred to produce F_2 generation of pea plants.

(i) What do the plants of F_1 generation look like ?

(b) What is the ratio of all plants to dwarf plants in F_2 generation ?

(c) Which type of plants were missing in F_1 generation but reappeared in F_2 generation ?

Watch Video Solution

54. A plant has two varieties, one with red petals and the other with white petals. When these two varieties are cross-pollinated, all the offsprings have red petals ?

(a) Which gene is dominant ?

(b) Choose suitable letters to represent the two genes.

Watch Video Solution

55. A plant has two varieties, one with red petals and the other with white petals. When these two varieties are cross-pollinated, all the offsprings have red petals ?

(a) Which gene is dominant ?

(b) Choose suitable letters to represent the two genes.

Watch Video Solution

56. A red-haired woman marries a brown-haired man, and all the children are brown haired. Explain this genetically.

Watch Video Solution

57. A black mouse mates with a brown mouse, and all the offsprings are back.

(a) Why are no brown offsprings produced ?

(b) If two of the black offpsrings mate with each other what kind of offspring would you

expect and in what proportions ? Give reason for your answer.

Watch Video Solution

58. A black mouse mates with a brown mouse, and all the offsprings are back.

(a) Why are no brown offsprings produced ?

(b) If two of the black offpsrings mate with each other what kind of offspring would you expect and in what proportions ? Give reason for your answer.

Watch Video Solution

59. (a) E is the gene for brown eye colour and e is the gene for blue eye colour. Which gene is (i) recessive, and (ii) dominant ?

(b) Both father and mother have the genes Ee in their cells. What colour are their eyes ?

(c) Which combination of genes in the zygote will produce children with blue eyes ?

(d) Which combinations of genes in the zygote will produce children with brown eyes ?

Watch Video Solution

60. (a) E is the gene for brown eye colour and e is the gene for blue eye colour. Which gene is (i) recessive, and (ii) dominant ?

(b) Both father and mother have the genes Ee in their cells. What colour are their eyes ?

(c) Which combination of genes in the zygote will produce children with blue eyes ?

(d) Which combinations of genes in the zygote will produce children with brown eyes ?

Watch Video Solution

61. Which combination of genes in the zygote will produce children with blue eyes?

Watch Video Solution

62. (a) E is the gene for brown eye colour and e is the gene for blue eye colour. Which gene is (i) recessive, and (ii) dominant ?

(b) Both father and mother have the genes Ee in their cells. What colour are their eyes ?

(c) Which combination of genes in the zygote

will produce children with blue eyes ?

(d) Which combinations of genes in the zygote will produce children with brown eyes ?

Watch Video Solution

63. What are the possible blood groups likely to be inherited by children born to a group A mother and a group B father ? Explain your reasoning.

Watch Video Solution

64. A couple with a newborn baby is troubled that the child does not resemble either of them. Suspecting that a mixup occurred at the hospital, they check the blood type of the infant. It is type O. Because the father is type A and the mother type B, they conclude that a mixup has definitly occurred. Are they correct ? Give reason for your answer.

Watch Video Solution

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

Watch Video Solution

66. 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 suggested that the genetic make up (or genotype) of the tall parent can be depicted as:

(a) TTWW (6) TTww(c) TtWW (d) TtWw

Give season for your choice.

Watch Video Solution

Worksheet 2

1. What name is given to the sequence of gradual changes over millions of years in which new species are produced ?

Watch Video Solution

2. State whether the following statement is true or false :

Human beings have evolved from chimpanzees.

Watch Video Solution

3. The forelimbs of a frog, a bird and a man show the same basic design (or basic structure) of bones. What name is given to such organs ?

Watch Video Solution

4. Out of the wing of a bird, wing of an insect and the wing of a bat:

which two are homologous organs ?

Watch Video Solution

5. Out of the wing of a bird, wing of an insect and the wing of a bat:

which two are analogous organs?

Watch Video Solution

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

broccoli, wild cabbage, cauliflower, cabbage

Watch Video Solution

7. Fill in the following blanks with suitable words:

The human forelimb and bat's forelimb are an example of organs whereas an insect's wing and a bat's wing are an example of organs.

Watch Video Solution

8. Fill in the following blanks with suitable words:

The evolution of eye is an example of evolution by _____

Watch Video Solution

9. Fill in the following blanks with suitable words:

The scientific name of all human beings is _____

Watch Video Solution

10. Fill in the following blanks with suitable words:

Broccoli has evolved from by the process of artificial selection _____

Watch Video Solution

11. Fill in the following blanks with suitable words:

The theory of natural selection for evolution was proposed by _____

Watch Video Solution

12. Match the terms given in column I with those given in column II :

	Column I		*Column II*
(i)	Fossil	(a)	A famous evolutionist
(ii)	A theory of evolution	(b)	Survival of the fittest
(iii)	Probable ancestor of birds	(c)	Petrified remains of prehistoric life
(iv)	Charles Darwin	(d)	Father of genetics
(v)	Gregor Mendel	(e)	Archaeopteryx

Watch Video Solution

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

A. a Chinese school boy

B. a chimpanzee

C. a spider

D. a bacterium

Answer:

Watch Video Solution

14. The human species has genetic roots in :

A. America

B. Africa

C. Australia

D. Antarctica

Answer:

Watch Video Solution

15. Which of the following gas was not present in early earth atmosphere ?

A. Ammonia

B. Oxygen

C. Hydrogen sulphide

D. Methane

Answer:

Watch Video Solution

16. A gradual change, over a long period, in a form of life is known as :

A. erosion

B. evolution

C. revolution

D. evaluation

Answer:

Watch Video Solution

17. Scientists believe that all life originated in :

A. the sea

B. the soil

C. the ground

D. the air

Answer:

Watch Video Solution

18. According to scientists, aves have evolved from :

A. mammals

B. amphibians

C. reptiles

D. arthropods

Answer:

Watch Video Solution

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

A. Mendel

B. Darwin

C. Dalton

D. Lamarck

Answer:

Watch Video Solution

20. The term 'father of genetics' is used for the scientist :

A. Morgan

B. Mendel

C. Darwin

D. Marie Curie

Answer:

Watch Video Solution

21. One of the following traits cannot be inherited. This one is :

A. colour of eyes

B. colour of skin

C. size of body

D. nature of hair

Answer:

Watch Video Solution

22. Only one of the following characteristic of the parents can be inherited by their childern. This one is :

A. deep scar on chin

B. snub nose

C. technique of swimming

D. cut nose

Answer:

Watch Video Solution

23. Which of the following statement is incorrect with respect to variations ?

A. all variations in a species have equal chance of survival

B. change in genetic composition results in variations

C. selection of variations by environmental factors forms the basis of evolutionary process

D. variations are the minimum in asexual reproduction

Answer:

Watch Video Solution

24. One of the following traits of the parents cannot be passed on to their future generations. This trait is :

A. cleft chin

B. pointed chin

C. scarred chin

D. broad chin

Answer:

Watch Video Solution

25. Some dinosaurs had feathers although they could not fly but birds have feathers that help them to fly. In the context of evolution, this means that :

A. reptiles have evolved from birds

B. there is no evolutionary connection between reptiles and birds

C. feathers are homologous structures in both the organisms

D. birds have evolved from reptiles

Answer:

Watch Video Solution

26. Select the incorrect statement from the following:

A. frequency of certain genes in a population changes over several generations resulting in evolution

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

C. low weight parents can have heavy weight progeny

D. traits which are not inherited over generations do not cause evolution,

Answer:

Watch Video Solution

27. New species may be formed if :

(i) DNA undergoes significant changes in germ cells

(ii) chromosome number changes in the gamete

(iii) there is no change in the genetic material

(iv) mating does not take place

A. (i) and (ii)

B. (i) and (iii)

C. (ii), (iii) and (iv)

D. (i), (ii) and (iii)

Answer:

Watch Video Solution

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

A. sudden creation by nature

B. accumulation of variations over several generations

C. clones formed during asexual reproduction

D. movement of individuals from one habitat to another.

Answer:

Watch Video Solution

29. Some of the important fossils which have been studied are those of organisms X, Y and Z. X were marine arthropods which were common between 400 to 600 million years ago. Y were the invertebrate animals (molluscs) with a flat, coiled, spiral shell which lived in the sea about 180 million years ago. Z are the extinct carnivorous or herbivorous reptiles which appeared on the earth about 250 million years ago and became extinct about 65 million years ago. What are X, Y and Z?

Watch Video Solution

30. The farmers have been cultivating a food plant X for over two thousand years and have produced as many as five entirely different looking vegetables A, B, C, D and E from it.

(a) What could the plant X be ?

(b) What are A, B, C, D and E

(c) What is the process of evolution involved in this example known as ?

Watch Video Solution

31. The farmers have been cultivating a food plant X for over two thousand years and have produced as many as five entirely different looking vegetables A, B, C, D and E from it.

(a) What could the plant X be ?

(b) What are A, B, C, D and E

(c) What is the process of evolution involved in this example known as ?

Watch Video Solution

32. The farmers have been cultivating a food plant X for over two thousand years and have produced as many as five entirely different looking vegetables A, B, C, D and E from it.

(a) What could the plant X be ?

(b) What are A, B, C, D and E

(c) What is the process of evolution involved in this example known as ?

Watch Video Solution

33. There are five animals A, B, C, D and E. The animal A uses its modified forelimbs for flying. The animal Buses its forelimbs for running whereas the animal C uses its forelimbs for grasping. The animal D can live on land as well as in water and uses its forelimbs to prop up the front end of its body when at rest. The animal E which respires by using spiracles and tracheae uses wings for flying but its wings are analogous to the modified forelimbs of animal A.

What could the animals A, B, C, D and E be?

Watch Video Solution

34. There are five animals A, B, C, D and E. The animal A uses its modified forelimbs for flying. The animal Buses its forelimbs for running whereas the animal C uses its forelimbs for grasping. The animal D can live on land as well as in water and uses its forelimbs to prop up the front end of its body when at rest. The animal E which respires by using spiracles and tracheae uses wings for flying but its wings are analogous to the modified forelimbs of

animal A.

Why are the forelimbs of animals A, B, C and D called homologous organs ?

Watch Video Solution

35. There are five animals A, B, C, D and E. The animal A uses its modified forelimbs for flying. The animal Buses its forelimbs for running whereas the animal C uses its forelimbs for grasping. The animal D can live on land as well as in water and uses its forelimbs to prop up

the front end of its body when at rest. The animal E which respires by using spiracles and tracheae uses wings for flying but its wings are analogous to the modified forelimbs of animal A.

What does the existence of homologous organs in animals A, B, C and D tell us about their ancestors?

Watch Video Solution

36. There are five animals A, B, C, D and E. The animal A uses its modified forelimbs for flying. The animal Buses its forelimbs for running whereas the animal C uses its forelimbs for grasping. The animal D can live on land as well as in water and uses its forelimbs to prop up the front end of its body when at rest. The animal E which respires by using spiracles and tracheae uses wings for flying but its wings are analogous to the modified forelimbs of animal A.

Why are the modified forelimbs of animal A

and the wings of animal E called analogous organs ?

Watch Video Solution

37. There are five animals A, B, C, D and E. The animal A uses its modified forelimbs for flying. The animal Buses its forelimbs for running whereas the animal C uses its forelimbs for grasping. The animal D can live on land as well as in water and uses its forelimbs to prop up the front end of its body when at rest. The

animal E which respires by using spiracles and tracheae uses wings for flying but its wings are analogous to the modified forelimbs of animal A.

State whether animals A and E have a common ancestor or not.

Watch Video Solution

38. X, Y, and Z are three animals. The animal X can fly but animal Y can only run on ground or walls. The forelimbs of animals X and Y have

the same basic design but they are used for different purposes such as flying and running respectively. The animal Z became extinct a long time ago. The study of fossils of Z tells us that it had some features like those of X and some like those of y. In fact, Z is said to form a connecting link in the evolutionary chain of X and Y.

What could the animals X, Y and Z be?

Watch Video Solution

39. X, Y, and Z are three animals. The animal X can fly but animal Y can only run on ground or walls. The forelimbs of animals X and Y have the same basic design but they are used for different purposes such as flying and running respectively. The animal Z became extinct a long time ago. The study of fossils of Z tells us that it had some features like those of X and some like those of y. In fact, Z is said to form a connecting link in the evolutionary chain of X and Y.

What name is given to the forelimbs like those

of X and Y which have the same basic design but different functions ?

Watch Video Solution

40. X, Y, and Z are three animals. The animal X can fly but animal Y can only run on ground or walls. The forelimbs of animals X and Y have the same basic design but they are used for different purposes such as flying and running respectively. The animal Z became extinct a long time ago. The study of fossils of Z tells us

that it had some features like those of X and some like those of y. In fact, Z is said to form a connecting link in the evolutionary chain of X and Y.

Name one feature in which Z resembled X.

Watch Video Solution

41. X, Y, and Z are three animals. The animal X can fly but animal Y can only run on ground or walls. The forelimbs of animals X and Y have the same basic design but they are used for

different purposes such as flying and running respectively. The animal Z became extinct a long time ago. The study of fossils of Z tells us that it had some features like those of X and some like those of y. In fact, Z is said to form a connecting link in the evolutionary chain of X and Y.

Name one feature in which Z resembled Y.

Watch Video Solution

42. X, Y, and Z are three animals. The animal X can fly but animal Y can only run on ground or walls. The forelimbs of animals X and Y have the same basic design but they are used for different purposes such as flying and running respectively. The animal Z became extinct a long time ago. The study of fossils of Z tells us that it had some features like those of X and some like those of y. In fact, Z is said to form a connecting link in the evolutionary chain of X and Y.

Which is the correct evolutionary chain

involving

X, Y and $Z: X \rightarrow Z \rightarrow Y$ or $Y \rightarrow Z \rightarrow X$

?

Watch Video Solution

43. A population of red beetles lives in green bushes in a garden. Once during the process of breeding, a green beetle is produced.

State whether the change in colour of beetle is a process of evolution or not.

Watch Video Solution

44. A population of red beetles lives in green bushes in a garden. Once during the process of breeding, a green beetle is produced.

Can the new colour of green beetle be passed on to its next generations ?

Watch Video Solution

45. A population of red beetles lives in green bushes in a garden. Once during the process of breeding, a green beetle is produced.

What will be the advantage (if any) of the green colour to the beetle ?

Watch Video Solution

46. A population of red beetles lives in green bushes in a garden. Once during the process of breeding, a green beetle is produced.

State whether the production of green colour involved a change in genetic material or not.

Watch Video Solution

Competitive Worksheet

1. Which of the following may be used to obtain an F_2 generation ?

A. allowing flowers on a parent plant to be self-pollinated

B. allowing flowers on an Fi plant to be self-pollinated

C. cross-pollinating an F! plant with a parent plant

D. cross-pollinating two parent plants

Answer:

Watch Video Solution

2. Thed following results were obtained by a scientist who crossed the F_1 generation of pure-breeding parents for round and wrinkled seeds.

Dominant trait Recissive trait No. of F_2 offspring

Round seeds Wrinkled seeds 7524

From these results, it can be concluded that the actual number of round seeds he obtained was :

A. 1881

B. 22572

C. 2508

D. 5643

Answer:

Watch Video Solution

3. The visible characteristic in an organism is known as :

A. prototype

B. stereotype

C. phenotype

D. genotype

Answer:

Watch Video Solution

4. Exchange of genetic material takes place in

A. vegetative reproduction

B. asexual reproduction

C. sexual reproduction

D. budding

Answer:

Watch Video Solution

5. 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 plant is not governed by gene T or t

Answer:

Watch Video Solution

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

A. one

B. two

C. three

D. four

Answer:

Watch Video Solution

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

A. $1:3$

B. $3:1$

C. $1:1$

D. $2:1$

Answer:

Watch Video Solution

8. 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. sex chromosomes

C. two different chromosomes

D. any chromosomes

Answer:

Watch Video Solution

9. Select the statements that describe characteristics of genes :

(i) genes are specific sequence of bases in a DNA molecule

(ii) a gene does not code for proteins

(iii) in individuals of a given species, a specific gene is located on a particular chromosome

(iv) each chromosome has only one gene

A. (i) and (ii)

B. (i) and (iii)

C. (i) and (iv)

D. (ii) and (iv)

Answer:

Watch Video Solution

10. Select the group which shares the 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:

Watch Video Solution

11. A trait in an organism is influenced by

A. paternal DNA only

B. maternal DNA only

C. both maternal and paternal DNA

D. neither by paternal nor by maternal DNA.

Answer:

Watch Video Solution

12. In human males all the chromosomes are paired perfectly except one. This/these unpaired chromosomes is/are :

(i) large chromosome (ii) small chromosome (iii) Y chromosome (iv) X chromosome

A. (i) and (ii)

B. (iii) only

C. (iii) and (iv)

D. (ii) and (iv)

Answer:

Watch Video Solution

13. 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 ?

Watch Video Solution

14. 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 ?

Watch Video Solution

15. 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 ?

Watch Video Solution

16. 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 ?

Watch Video Solution

17. 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 ?

Watch Video Solution

18. The person A has only B chromosomes in all its gametes. On the other hand, another person C has chromosome D in half of gametes and chromosome E in the other half of gametes. When chromosomes B and D combine during fertilisation, a female zygote results. On the other hand, combination of B and E chromosomes produces a male zygote.

(a) What are chromosomes (i) B (ii) D, and (iii) E ?

(b) Out of B, D and E, which two chromosomes are of the same type ?

(c) Which chromosome is smaller in size ?

(d) What is the general name of chromosomes such as B and E ?

(e) Out of the two persons A and C, which one is (i) male, and (ii) female ?

Watch Video Solution

19. The person A has only B chromosomes in all its gametes. On the other hand, another person C has chromosome D in half of gametes and chromosome E in the other half

of gametes. When chromosomes B and D combine during fertilisation, a female zygote results. On the other hand, combination of B and E chromosomes produces a male zygote.

(a) What are chromosomes (i) B (ii) D, and (iii) E ?

(b) Out of B, D and E, which two chromosomes are of the same type ?

(c) Which chromosome is smaller in size ?

(d) What is the general name of chromosomes such as B and E ?

(e) Out of the two persons A and C, which one is (i) male, and (ii) female ?

Watch Video Solution

20. The person A has only B chromosomes in all its gametes. On the other hand, another person C has chromosome D in half of gametes and chromosome E in the other half of gametes. When chromosomes B and D combine during fertilisation, a female zygote results. On the other hand, combination of B and E chromosomes produces a male zygote.

(a) What are chromosomes (i) B (ii) D, and (iii) E ?

(b) Out of B, D and E, which two chromosomes are of the same type ?

(c) Which chromosome is smaller in size ?

(d) What is the general name of chromosomes such as B and E ?

(e) Out of the two persons A and C, which one is (i) male, and (ii) female ?

Watch Video Solution

21. The person A has only B chromosomes in all its gametes. On the other hand, another

person C has chromosome D in half of gametes and chromosome E in the other half of gametes. When chromosomes B and D combine during fertilisation, a female zygote results. On the other hand, combination of B and E chromosomes produces a male zygote.

(a) What are chromosomes (i) B (ii) D, and (iii) E ?

(b) Out of B, D and E, which two chromosomes are of the same type ?

(c) Which chromosome is smaller in size ?

(d) What is the general name of chromosomes such as B and E ?

(e) Out of the two persons A and C, which one is (i) male, and (ii) female ?

Watch Video Solution

22. The person A has only B chromosomes in all its gametes. On the other hand, another person C has chromosome D in half of gametes and chromosome E in the other half of gametes. When chromosomes B and D combine during fertilisation, a female zygote results. On the other hand, combination of B

and E chromosomes produces a male zygote.

(a) What are chromosomes (i) B (ii) D, and (iii) E ?

(b) Out of B, D and E, which two chromosomes are of the same type ?

(c) Which chromosome is smaller in size ?

(d) What is the general name of chromosomes such as B and E ?

(e) Out of the two persons A and C, which one is (i) male, and (ii) female ?

Watch Video Solution

23. Mendel first crossed pure-bred pea plants having round-yellow seeds with pure-bred pea plants having wrinkled-green seeds and found that only round-yellow seeds were produced in the F_1 generation. When F generation pea plants having round-yellow seeds were cross-bred by self pollination, then peas having round- yellow seeds, round green seeds, wrinkled-yellow seeds and wrinkled-green seeds were produced. Mendel collected a total of 2160 seeds.

What will be the number of (i) round green

seeds (ii) wrinkled green seeds (iii) round yellow seeds, and (iv) wrinkled-yellowseeds?

Watch Video Solution

24. Mendel first crossed pure-bred pea plants having round-yellow seeds with pure-bred pea plants having wrinkled-green seeds and found that only round-yellow seeds were produced in the F_1 generation. When F generation pea plants having round-yellow seeds were cross-bred by self pollination, then peas having

round- yellow seeds, round green seeds, wrinkled-yellow seeds and wrinkled-green seeds were produced. Mendel collected a total of 2160 seeds.

Which ‘ratio' as established by Mendel have you made use of in answering the part (a) above?

Watch Video Solution

25. Pure-bred round-yellow pea seeds have genotype RRYY and the pure-bred wrinkled-

green pea seeds have genotype rryy. Keeping this in mind, write the phenotypes of the following genotypes of hybrid pea seeds :

(a) Rryy (b) rrYy (c) rrYY (d) RrYy (e) RRyy

Watch Video Solution

26. The organs which perform different functions but have the same basic structure are known as :

A. homologous organs

B. analogous organs

C. homolytic organs

D. analytic organs

Answer:

Watch Video Solution

27. The organs which perform similar functions but have different basic structure are called :

A. asymmetric organs

B. analogous organs

C. homologous organs

D. homophonic organs

Answer:

Watch Video Solution

28. Wing of an insect and forelimb of a bird are :

A. analogous organs

B. analeptic organs

C. homologous organs

D. homophobic organs

Answer:

Watch Video Solution

29. If the fossil of an organism is found in the deeper layer of earth, then we can predict that

A. the extinction of organism has occurred recently

B. the extinction of organism has occurred thousands of years ago

C. the fossil position in the layers of earth is not related to its time of extinction

D. time of extinction cannot be determined

Answer:

Watch Video Solution

30. The presence of which of the following types of organs in two animals indicates that they are not derived from a common ancestor ?

A. homologous organs

B. excretory organs

C. analogous organs

D. reproductive organs

Answer:

Watch Video Solution

31. The presence of which of the following types of organs in two organisms indicates that they are derived from the same ancestor ?

A. analogous organs

B. respiratory organs

C. digestive organs

D. homologous organs

Answer:

Watch Video Solution

32. One of the following has not been produced from wild cabbage by the process of artificial selection. This one is :

A. kohlrabi

B. cabbage

C. spinach

D. kale

Answer:

Watch Video Solution

33. The fossil trilobite was originally :

A. an arthropod

B. an invertebrate

C. a reptile

D. an ave

Answer:

Watch Video Solution

34. One pair of organs in the following animals are not homologous. This is :

A. forelimbs in humans and lizard

B. forelimbs in lizard and frog

C. wings in butterfly and bat

D. wings in bat and bird

Answer:

Watch Video Solution