$CCPP$ (Coloured) $\times$ $ccpp$ (colourless)

F_1 $CcPp$ coloured

	CP	Cp	cP	cp
CP	$CCPP$	$CCPp$	$CcPP$	$CcPp$
Cp	$CCPp$	$CCpp$	$CcPp$	$Ccpp$
cP	$CcPP$	$CcPp$	$ccPp$	$ccPp$
cp	$CcPp$	$Ccpp$	$ccPp$	$ccpp$

Phenotype

9 : 7

9 → coloured

7 → colourless

Epistasis

Dominant

White
WWYY

×

Green.
wwyy
White

F1
WwYy

12 : 3 : 1

	WY	Wy	wY	wy
WY	WWYY	WWYy	WwYY	WwYy
Wy				
wY				
wy				

Inheritance

22 July 1822

1. Mendel was born in
   (a) 17th century
   (b) 18th century
   (c) 19th century
   (d) 8th century

2. Mendel was the native of
   (a) France
   (b) Sweden
   (c) India
   (d) Austria

3. Mendel proposed which of the following terms for hereditary units?
   (a) Factor (determiner)
   (b) Genome
   (c) Genetic particle
   (d) None of these

4. In genetics, the use of chequer board was done by
   (a) Mendel
   (b) Correns
   (c) Punnet
   (d) Darwin

5. In 1900 CE, three biologists independently discovered Mendel's principles. They are
   (a) De Vries, Correns and Tschermak
   (b) Sutton, Morgan and Bridges
   (c) Avery, MacLeod and McCarty
   (d) Bateson, Punnet and Bridges

6. Which of the following has been used for genetic researches?
   (a) Pisum
   (b) Neurospora
   (c) E. coli
   (d) All of these

7. Organism of pure line is that which produces individuals of
   (a) Dominant characters
   (b) Recessive characters
   (c) Its own characters
   (d) Intermediate type

8. Mendel is famous for his work on
   (a) Pisum
   (b) Drosophila
   (c) Neurospora
   (d) Oenothera

9. The main reason for the success of Mendel was
   (a) Study of all the characters at the same time
   (b) Study of one character at one time
   (c) Study of all the plants at the same time
   (d) Counting of plants

10. The alleles are

(a) A pair of genes governing a specific character such as tallness or dwarfness.

(b) Multiple forms of genes.

(c) Genes governing eye characters.

(d) Genes present in allosomes.

11. An allele is said to be dominant if

(a) It is expressed only in heterozygous combination.

(b) It is expressed only in homozygous combination.

(c) It is expressed in both homozygous and heterozygous condition.

(d) It is expressed only in second generation.

12. What is the correct sequence of the following events?

1. Formation of the chromosome theory of heredity.
2. Experiments which proved that DNA is the hereditary material.
3. Mendel's laws of inheritance—discovery.

(a) 1, 3 and 2 (b) 1, 2 and 3 (c) 3, 1 and 2 (d) 2, 1 and 3

13. When a true breeding pea plant that has yellow seeds is pollinated by a plant that has green seeds, then all the F_1 plants have yellow seeds. This means that the allele for yellow is

(a) Heterozygous (b) Dominant

(c) Recessive (d) Lethal

14. An organism's genetic constitution is called its

(a) Genotype (b) Phenotype

(c) Holotype (d) None of these

15. An organism with two identical alleles for a given trait is

(a) Homozygous (b) Segregating

(c) Dominant (d) A hermaphrodite

16. What type of gametes will be formed by genotype RrYy?

(a) RY, Ry, rY, ry (b) RY, Ry, ry, ry

(c) Ry, Ry, Yy, ry (d) Rr, RR, Yy, YY

17. Which genotype characterizes an organism that is heterozygous for two genes?

(a) RRYy (b) RrYY (c) RRYY (d) RrYy

18. The dwarfness in plants of F_2 generation is

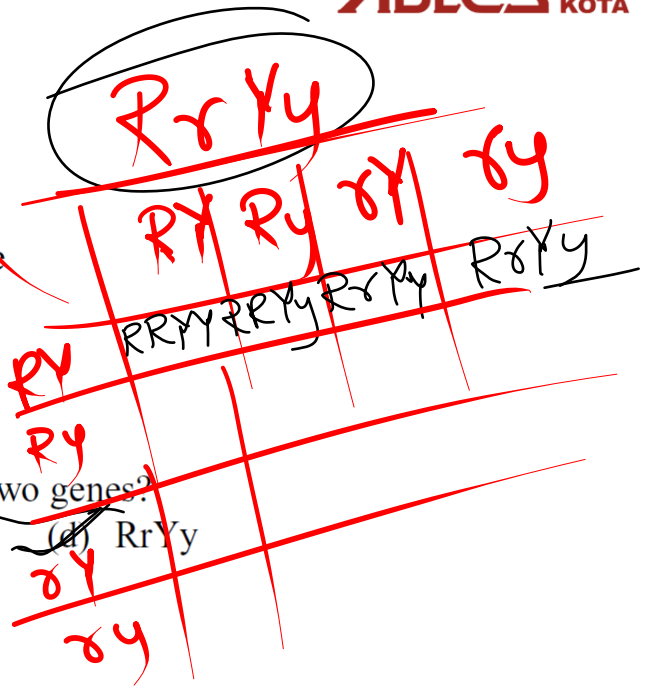
(a) Recessive (b) Dominant

(c) Both (a) and (b) (d) None of these

19. When heterozygous tall plants are self-pollinated, then tall and dwarf plants are obtained. This explains

(a) Law of purity of gamete (b) Segregation of law

(c) Division in spores (d) Independent assortment



20. Mendel's principle of segregation was based on the separation of alleles in the garden pea during

(a) Pollination
(b) Embryonic development
(c) Seed formation
(d) Gamete formation

21. Which of the following is the dominant character according to Mendel?

(a) Dwarf plant and yellow fruit
(b) Terminal fruit and wrinkled seed
(c) White testa and yellow pericarp
(d) Green coloured pod and rounded seed

22. In Mendelism, the linkage was not observed due to

(a) Mutation
(b) Independent assortment
(c) Synapsis
(d) Crossing over

23. Mendel's law of heredity can be explained with the help of

(a) Mitosis
(b) Meiosis
(c) Both mitosis and meiosis
(d) None of these

24. A cross between plants having RRYY and rryy composition will yield plants with

(a) Round and yellow seeds
(b) Round and green seeds
(c) Wrinkled and yellow seeds
(d) Wrinkled and green seeds

25. The genotype of an individual is Rr Bb. How many different types of gametes will it produce based on the law of independent assortment?

(a) 16 (b) 9 (c) 8 (d) 4

RRYY x rryy
RrYy
Round and yellow seeds
RrBb

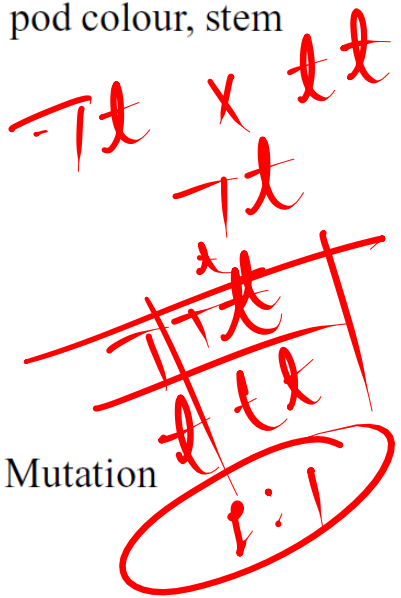
26. Which of the following is heterozygous for two pairs of alleles?
(a) TTRR (b) TrRR (c) ttrr (d) TrtR

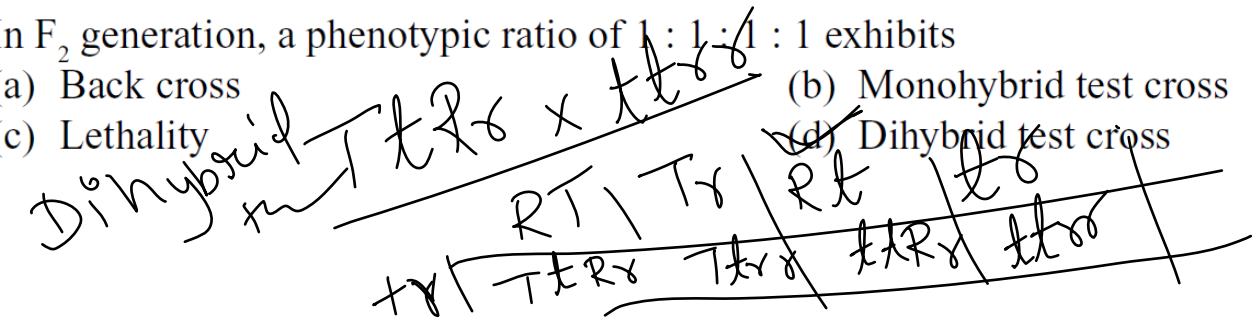
27. In Mendel's experiment, nature of seed coat, flower colour, position of flower, pod colour, stem height, etc., are referred to as
(a) Alleles (b) Genotypes
(c) Phenotypes (d) All of these

28. A cross between a homozygous recessive and a heterozygous plant is called
(a) Monohybrid cross (b) Dihybrid cross
(c) Test cross (d) Back cross

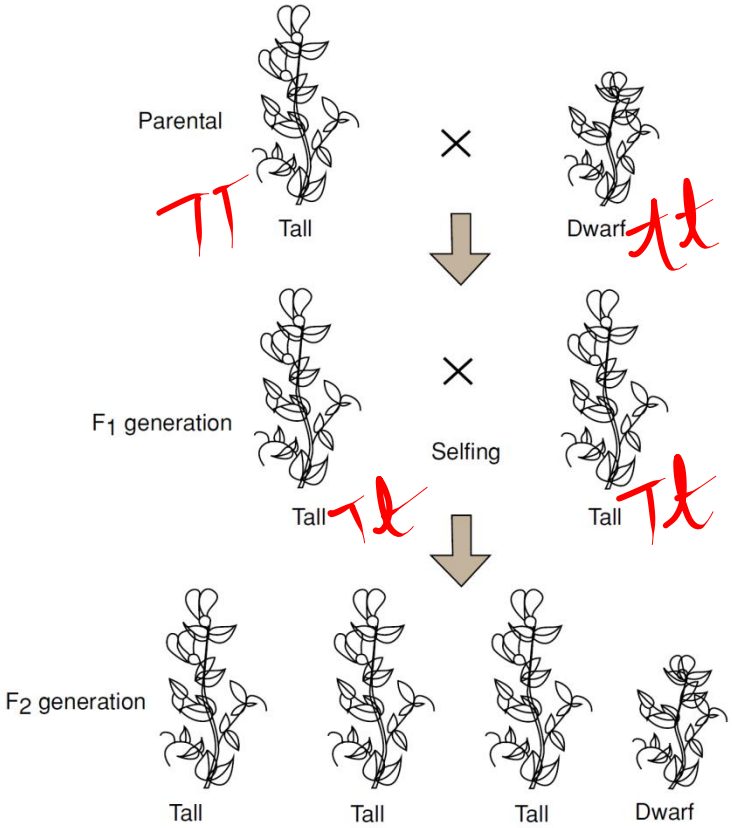
29. Cross between F_1 plant and recessive female plant is called
(a) Back cross (b) Test cross (c) Out cross (d) Mutation

30. In F_2 generation, a phenotypic ratio of 1 : 1 : 1 : 1 exhibits
(a) Back cross (b) Monohybrid test cross
(c) Lethality (d) Dihybrid test cross



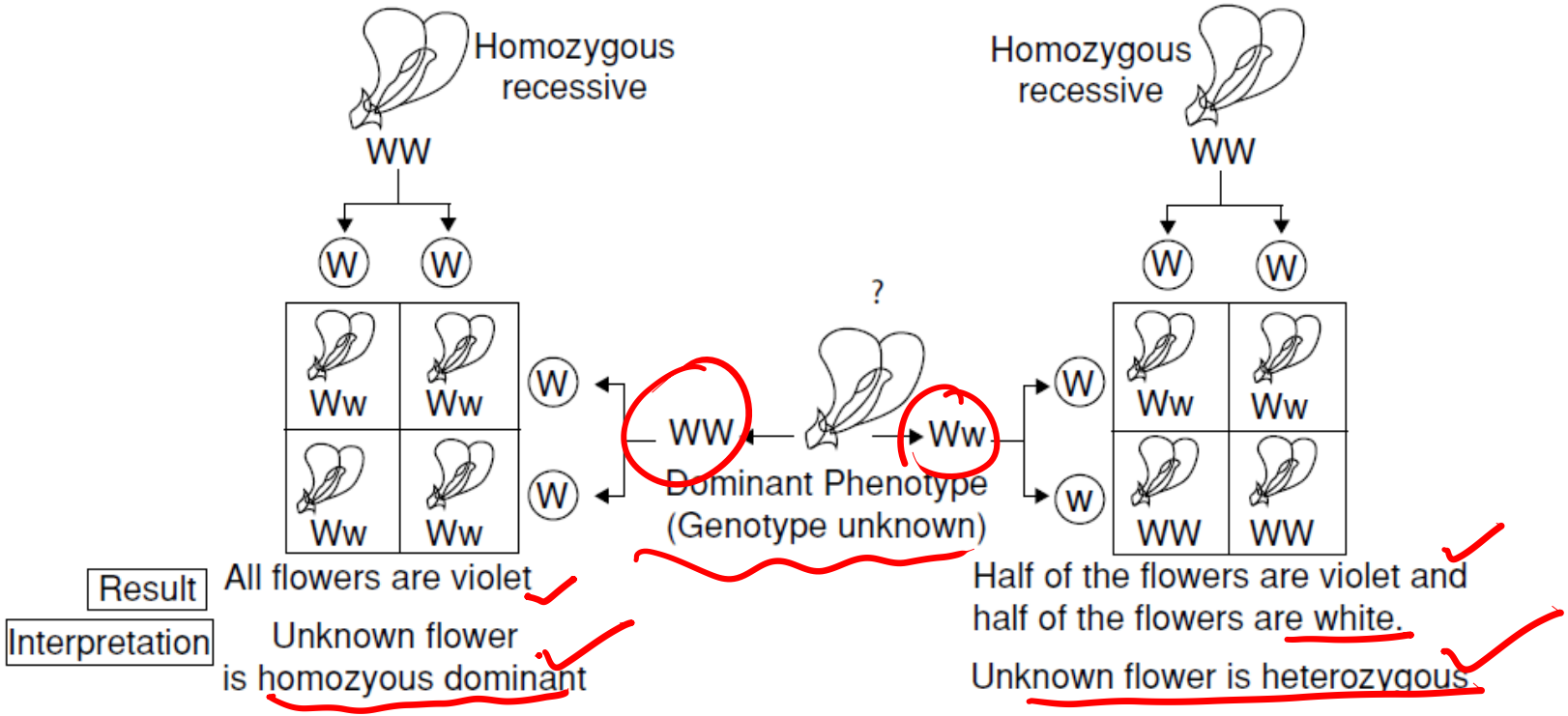


58. The below diagram shows:



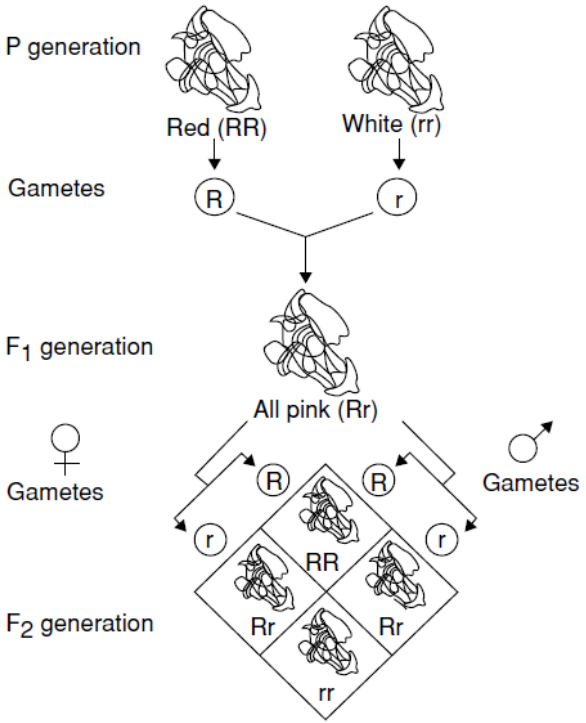
(a) Monohybrid cross
(b) Dihydrid cross
(c) Trihydrid cross
(d) All the above

59. The below diagram represents



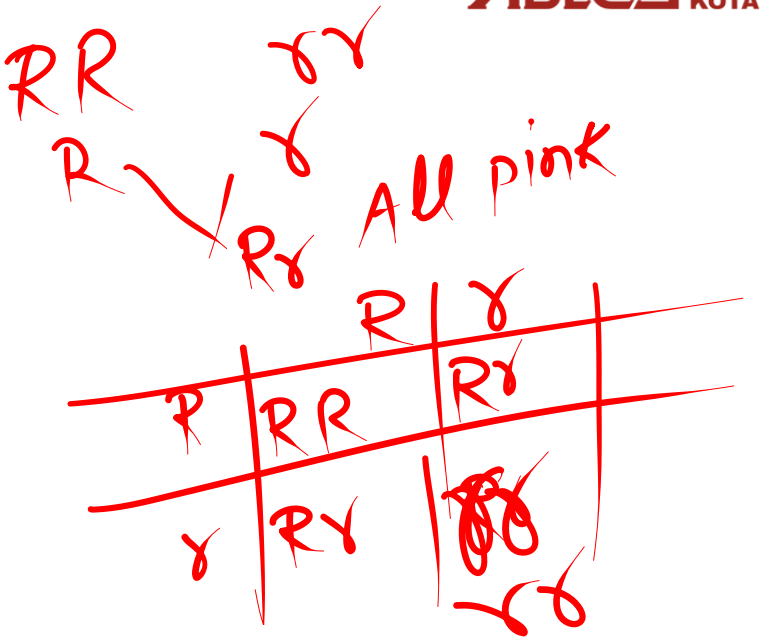
(a) Back cross
(b) Out cross
(c) Test cross
(d) Dihybrid cross

60. The below diagram represents



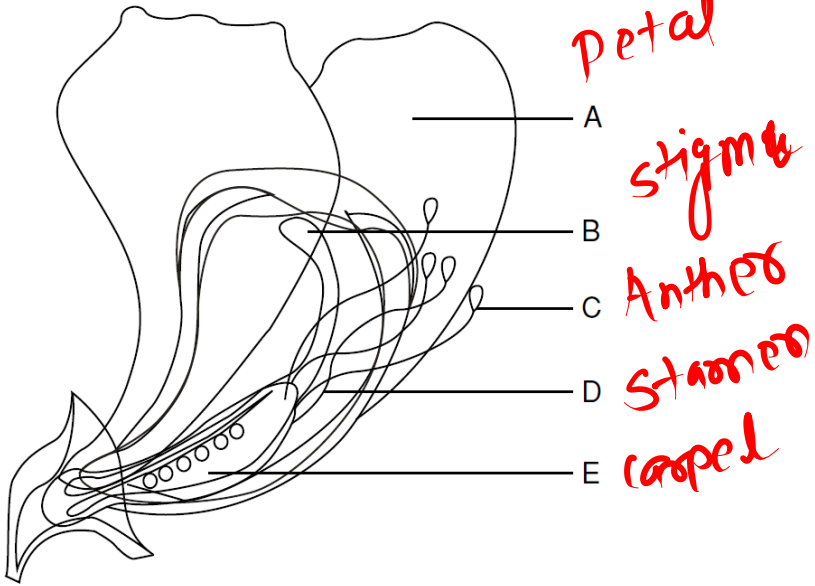
Phenotypic ratio : red : pink : white
1 : 2 : 1

Genotypic ratio : RR : Rr : rr
1 : 2 : 1



(a) Dominant epistasis
(b) Recessive epistasis
(c) Incomplete dominance
(d) Co-dominance

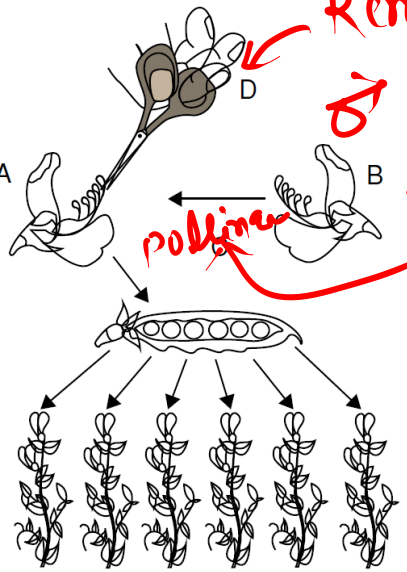
61. Identify A to E in this figure.



Petal
stigma
Anther
Stamen
carpel

(a) A: Petal; B: Stigma; C: Anther; D: Stamen; E: Carpel
(b) A: Anther; B: Petal; C: Stigma; D: Carpel; E: Stamen
(c) A: Carpel; B: Stamen; C: Anther; D: Stigma; E: Petal
(d) A: Stigma; B: Petal; C: Stamen; D: Anther; E: Carpel

62. Identify A, B, C and D in this figure?



A = Female
B – Male
C = Transfer of pollen
D = Removal of anther

Removal of anthers (Emasculation)

Transfer of pollen

(a) A: Female parent; B: Removal of anthers (Emasculation); C: Transfer of pollen (Pollination); D: Male parent

(b) A: Male parent; B: Female parent; C: Removal of anthers (Emasculation); D: Transfer of pollen (Pollination)

(c) A: Removal of anthers (Emasculation); B: Female parent; C: Transfer of pollen (Pollination); D: Male parent

(d) A: Female parent; B: Male parent; C: Transfer of pollen (Pollination); D: Removal of anthers (Emasculation)

97. The below figure possess which of the following sex chromosomes?

two similar ZZ chromosomes

Male ZZ

(a) XX
(c) ZZ
(b) XY
(d) ZW