

परीक्षार्थी का पूरा नाम Vaishali Sharma  
कक्ष निरीक्षक का नाम \_\_\_\_\_  
परीक्षार्थी द्वारा सम्पूर्ण प्रश्नपत्र में  
अनुक्रमांक (शब्दों में) \_\_\_\_\_

**Aguy**



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2018-

भाग-2

M.Sc. Internal

# चौधरी चरण सिंह विश्वविद्यालय, मेरठ

## Ch. Charan Singh University, Meerut

निम्नलिखित विवरण परीक्षार्थी द्वारा स्वयं भरा जाए (To be filled by the Examinee)

all  
07/05/19

परीक्षा का नाम.....  
(Name of Exam)

M.Sc. Ist year 2017  
(Year 20.....)

भाग/सेमेस्टर I  
(Part / Semester)

विषय Zoology - Genetics  
(Subject)

प्रश्न-पत्र/पाठ्यक्रम  
(Paper/Course)

पेपर कोड नं. H-2063  
(Paper Code No.)

परीक्षा का दिन.....  
(Day of Examination)

Thursday

दिनांक  
(Date)

2/5/19

### प्राप्तांक एवं पूर्णांक परीक्षार्थी द्वारा भरे जायें

पूर्णांक  
(Max. Marks)

प्रश्नों की क्रम संख्या	a/I	b/II	c/III	d/IV	e/V	f/VI	g/VII	h/VIII	i/IX	j/X	योग
1	/	/	/	/	/					5	
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प्राप्तांक

(शब्दों में)

अंकों में

जाँचकर्ता के हस्ताक्षर एवं तिथि

परीक्षक के हस्ताक्षर एवं तिथि



2018-

भाग-3

# चौधरी चरण सिंह विश्वविद्यालय, मेरठ

आयोग नियंत्रित नेपु प्राइवेट भाग रेप्रेन्टेटर

Date Stamp to be affixed here

मार्गदर्शक

(परीक्षार्थी द्वारा भरा जाए)

परीक्षा का नाम M.Sc. Ist year

भाग/सेमेस्टर Ist

विषय Zoology - Genetics

प्रश्न पत्र 2/5/19

परीक्षार्थी का अनुक्रमांक (Roll Number)

उत्तर-पुस्तिका क्रमांक

KM-I-01-

कालेज कोड

018

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3 3 3

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5 5 5

6 6 6

7 7 7

8 8 8

9 9 9

(परीक्षार्थी की श्रेणी)

- संस्थागत
- व्यावसायिक
- दैवि पेपर
- अंक सुधार
- भूतपूर्व
- एकल विषय

नामांकन संख्या (Enrollment Number)

M15541386

पेपर कोड 42063

परीक्षार्थी का पूरा नाम

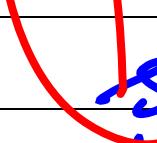
Vaishali Sharma  
कक्ष निरीक्षक का नाम

**Aguy**

# Section - 'A'

Q1  
Ans

In starting Mendel experiments on insects, birds & animal. But Mendel was a cluzy men. So he was restricted to the  Social People.

And then Mendel  going his experiments on plant. Mendel Selected the Prism sativum for his experiment. He give 3 types of observation by his experiments.

Q-9. Genetic Code is the 3 Nucleotides  
→ base Code of m-RNA  
→ Each Code is responsible  
for a specific coding of  
Nucleotides base.

→ for ex → AUG Code for  
methionine.

→ Genetic Code is 2 types =:

1) Initiation Codon

2) Termination Codon / amino acid code

Initiation Codon → Initiation Codon  
 are responsible for starting protein chain.

→ AUG & GUG Code for methionine.

→ it is also called Silent mutation.

Termination Codon

are the Codon which know amino acid in assigned m-RNA code for synthesis.

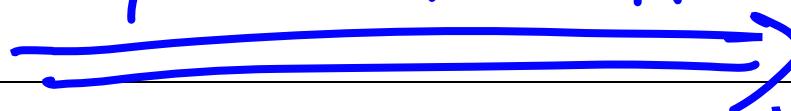
# Acid Sequence.

→ This Codon are called Non-Scence there is No Scence Codon

1) UAA A  
2) UAG  
3) UGA } are the non-Scence Codon.

~~Ques 3~~

## Gene bank



Gene bank is the Sequence Database. In Sequence DNA & RNA Database is Sequence. Sequence Database that Collect the Biological Nucleotide Sequence, Protein Sequence, & Polymer Sequence.

→ Gene bank are Connect with the EMBL.

→ European Molecular Biological Laboratory All the Collect all the Data with the help of Gene Bank, DNA Data Bank of Japan.

→ Gene bank help in new researches.

→ By the Gene bank we know sequence of any DNA & RNA fragments.

~~S-a~~ → PCR → Polymerised chain  
Reaction.

→ The PCR is a technique that is used to copy DNA making millions of fragments.

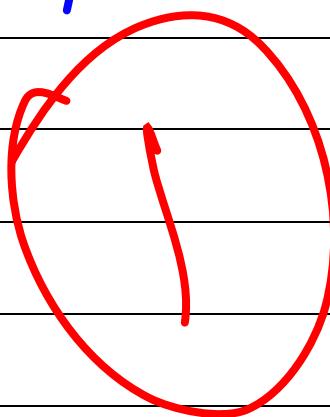
→ The first PCR was developed by Kary Mullis.

→ The PCR is used in molecular Biology.

→ PCR is a tool used in laboratory & Experiments.

→ its function on the 3 stages.

- 1) Denaturation
- 2) Annealing
- 3) Polymerised.



→ In Some Process This PCR Complete.

~~S - S~~ Split Gene → A gene with  
is interrupted in the sequence of Nucleotides.

⇒ In other words, Interrupted Sequence does not consist of any Sequences.

⇒ it contains by the introns & Exon.

Exon 1 Intron Exon 2

Exon Intron Exon

Transcription

Intron

5' — m RNA. — 3'

Split Gene

# Section 'B'

Q1

Polytene chromosome

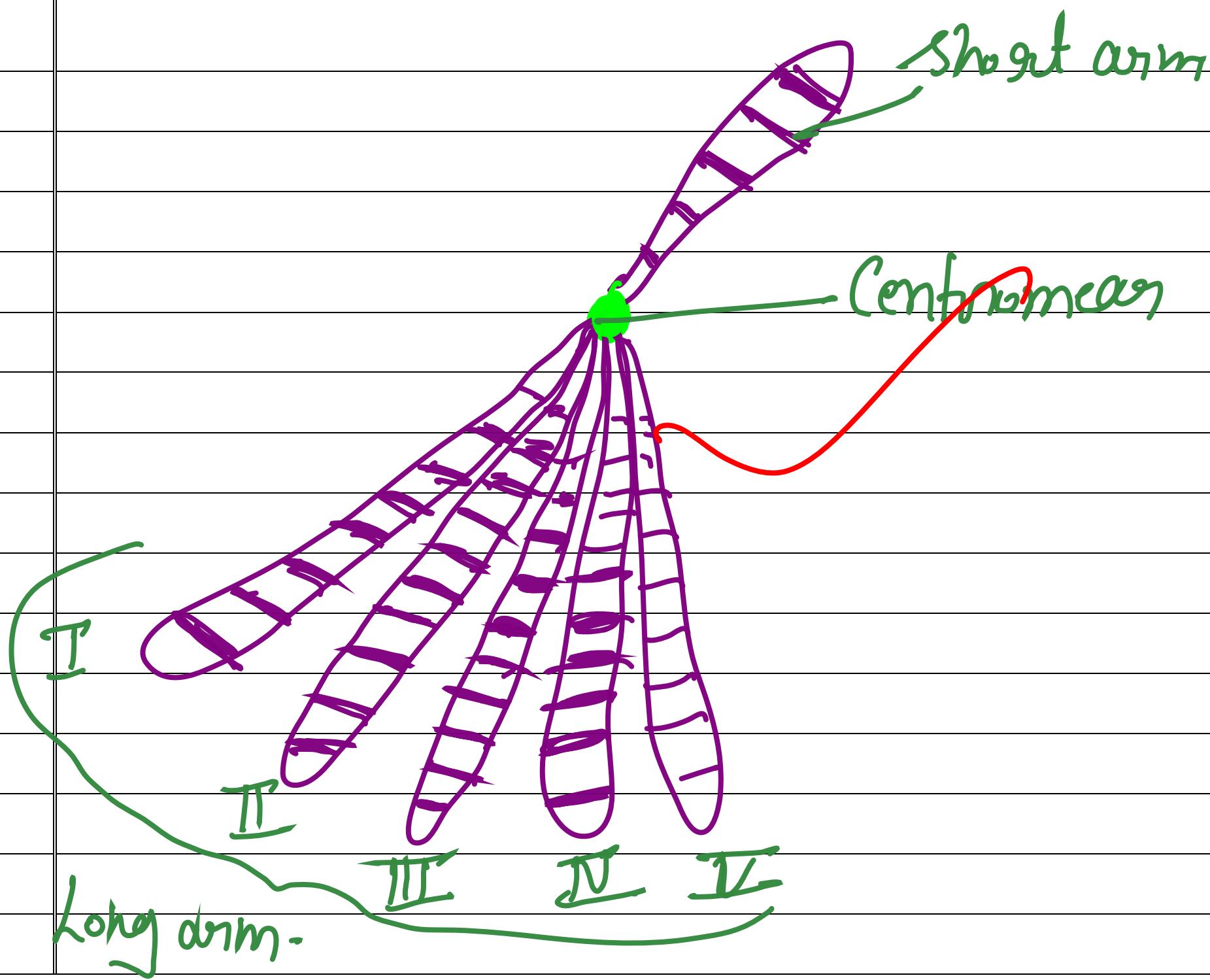
Polydene

chromosome found in the Salivary gland.

→ It is also occurred in Nervous System of mammals.

→ Polytene than the chromose are smaller Lambdaish chromose.

- Polytene chromosome Composed with the many arm.
- its have 5 long arm & 1 short arm.
- This arm are attached by the centromere.
- Polytene chromosome are smaller size. this arm in form of clusters.



→ it is also called **GR**  
chromosome.

→ Such as the it found in  
Salivary gland it helps in  
in the Salivation of mammals.

→ it also helps in the  
nervous system.

Q Summary of Mendelian Principle.

- Introduction
- ② Law of Dominance
- ① Law of Segregation
- ③ Law of Independent Assortment.

# Section "C"

- Mendelian Principle → Mendel was started insect, moth & animals. but the people.
- After that he started experiments on the plants.
- Mendel Selected the plant as *Pisum Sativum*.

- He Select the pea plant  
b/c In gamous Condition are found -  
 classmate
- In this plant Cross fertilization occurred.
- So that is the biggest reason for in selection of pea plant b/c self fertilization & Cross fertilization Occurred.
- Mendel give 3 Principle .

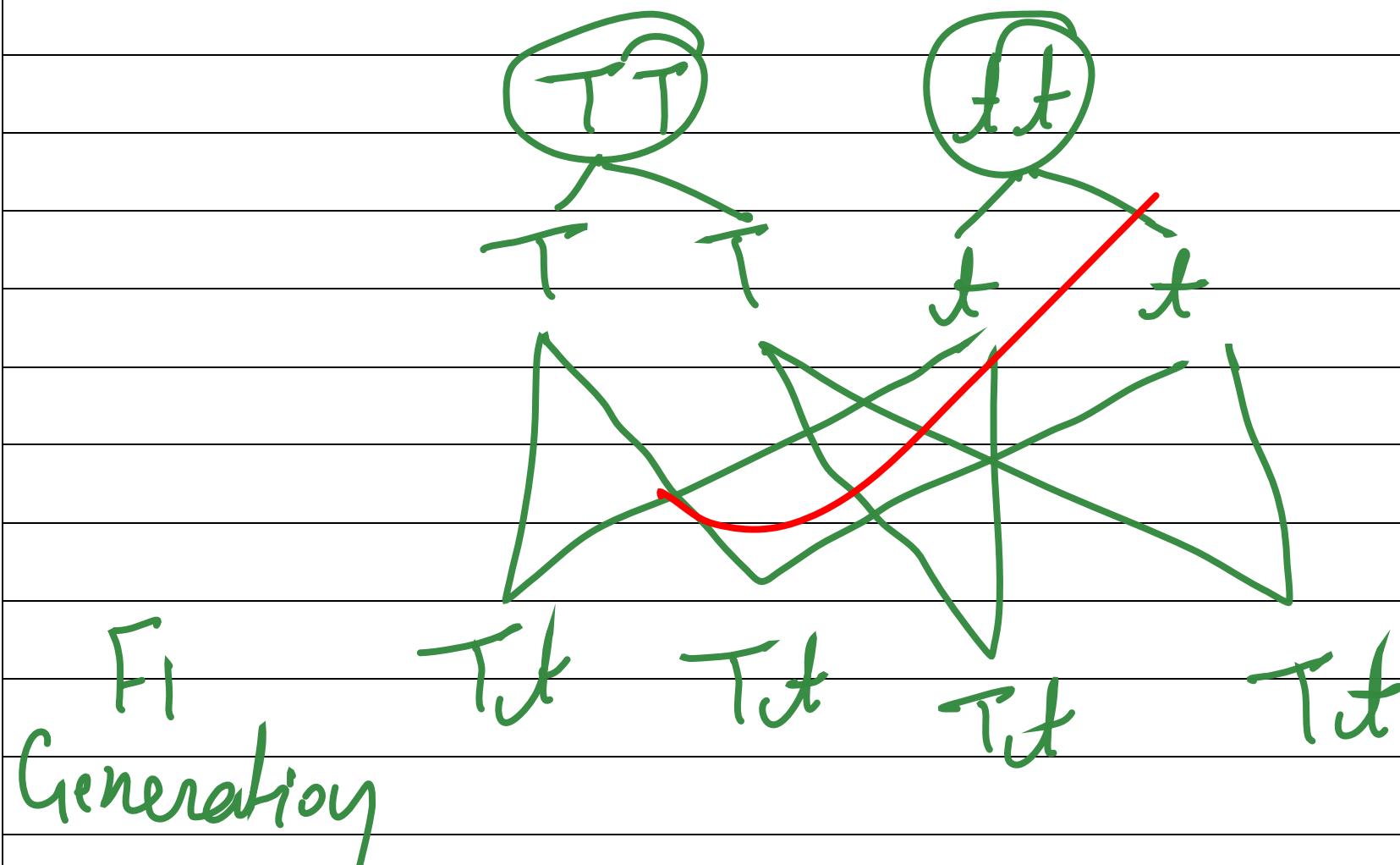
- 1) Law of Dominance.
- 2) Law of Segregation / pairing of gamets.
- 3) Law of independent Assortment.

→ He give the 3 Most important principle by his experiments.

## Law of Dominance → In this Law

if we make a cross between two pure characters Then only one character appears in F<sub>1</sub> Generation.

→ So which character appears in F<sub>1</sub> Generation are called dominant & which character are appeared in F<sub>1</sub> Generation is called recessive.



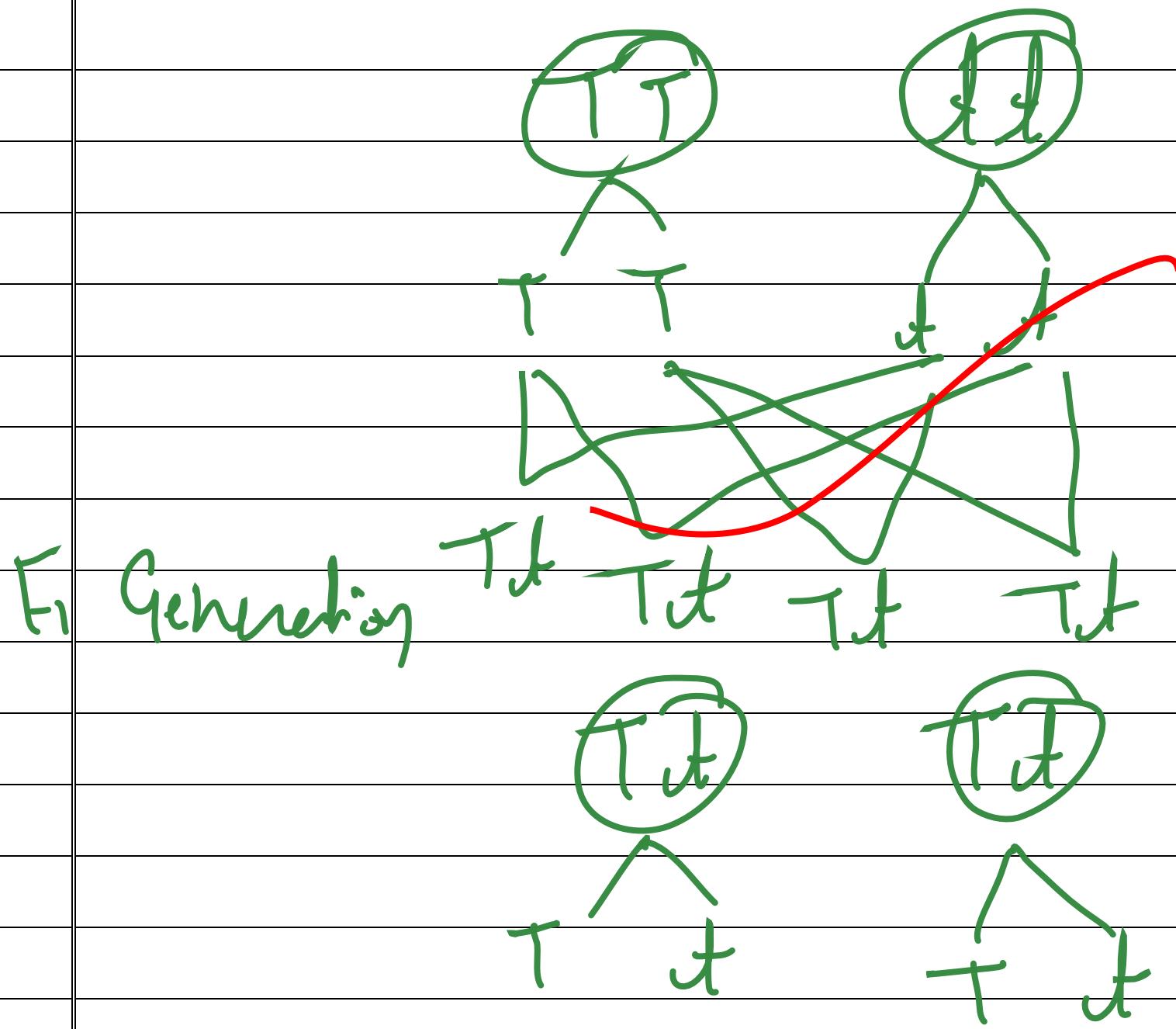
Law of Dominance

20

2. Law of Segregation → if it is also called Purity of gamets.

In this ~~clid~~ Generation its disappears which appear in  $F_1$  in  $F_2$  character.

Pure haploid. b/c gametes are finished but they are reappear in  $F_2$  Generation.



A hand-drawn Punnett square diagram in green ink on white paper. The label "F<sub>2</sub> Generation" is written vertically on the left side. The diagram consists of four columns and four rows of ovals, representing the inheritance of two traits. The first trait, represented by the letter "T", has three genotypes: TT (top oval), Tt (middle oval), and tt (bottom oval). The second trait, represented by the letter "t", also has three genotypes: TT (leftmost oval), Tt (middle oval), and tt (rightmost oval). The ovals are interconnected by a network of green lines, forming a complex web that connects all four genotypes of each trait across the grid.

# Law of Independent Assortment

One character is not affected by the other. This ratio is found in 9:3:3:1.

→ Mendel Selected Only Seven characters for his experiments.

character	Dominant	Recessive.
① Height	Tall	Dwarf
② Pod Colour	Green	Yellow
③ Pod shape	smooth	Recessive
④ Seed Colour	Yellow	Green.
⑤ Seed shape	Smooth	Wrinkled

⑥	Colour of flower	Red	white
⑤	Place of flower.	axial	Terminal

- Mendel was successful in his experiment b/c they focused not focus on mechanism.
- Mendel was a statistician to grow data.
- Mendel read Hm'e.

# ~~No~~ Numerical alternation of chromosome

Summary

(i) chromosomal aberration

(ii) Numerical aberration

(iii) Structural aberration

Numerically aberration

1) Aneuploidy

2) Euploidy

Aneuploidy → Monoploidy

Diploidy

Polyplosity

Euploidly → Nullisomy

Disomy

Trisomy

Tetrasomy

chromosomal aberration → chromosomal  
aberration are due to the  
changes in the chromosome  
Number.

- chromosomal aberration are due to changes in the alternation of chromosome.
- chromosomal alternation are occurred when cell division are found.

→ In meiotic & mitotic chromosomal occurred. Hc in this stage chromosome are synthesized. So one or less numbers of chromosomes are found.

Numerical aberration → Numerical aberration occurred due to Number of chromosomes. Add the less and more number of chromosomes.

Numerical alternation is the  
3 types:-

1) Monoploidy

only one  
occurred -  
the  $(x)$

In this stage  
set of chromosome  
denoted by

2) Diploidy

2 pairs  
of chromosome  
is called Diploidy.  $(2x)$

### 3) Polyploidy

~~number of~~ chromosome present.  
 $2^x$ ,  $3^x$ ,  $4^x$ ,  $5^x$ )

In this stage more than  
Number of chromosome more  
than two.

# Aneuploidy

Abnormality

in chromosome.

Aneuploidy is the number of

- either in autosomes & Sex chromosome.
- Aneuploidy has 4 types.
  - 1) Nullisomy
  - 2) Monosomy
  - 3) Trisomy
  - 4) Tetrasomy.

① ~~Nullisomy~~ → Lack of a pair  
of chromosome.

$$(2n-1)$$

② ~~Monosomy~~ → In this type of  
one pair of chromosome and  
less. ( $2n-1$ )

3) Trisomy → In this one pair of chromosome are  $(2n+1)$  more.

↳ Down Syndrome Example.

→ Turner Syndrome.

4) Tetrasomy → 2 pairs of chromosome. are more numbers! ( $2n+1$ )

## Section 'B'

~~A-Q~~ In-Born Disorders → In Birth

errors that are those found in abnormality Birth.  
→ its not Genetic Disorders. This do not pass in next Generation.

→ Two In-born Errors are the

1) PKU (Phenylketonuria)

2) AKU (AlKetonuria).

This error can pass to next generation. This errors are not In-born errors.









