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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)

परीक्षा का नाम M.Sc. वर्ष 20 19 भाग/सेमेस्टर IInd-Sem
(Name of Exam) (Year 20.....) (Part / Semester)

विषय Zoology प्रश्न-पत्र/पाठ्यक्रम Genetics पेपर कोड नं. H-1067
(Subject) (Paper / Course) (Paper Code No.)

परीक्षा का दिन Thursday दिनांक 28/3/19
(Day of Examination) (Date)

प्राप्तांक एवं पूर्णांक परीक्षकों 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	1	1	1	1	1						
2	2 1/2	2 1/2									12 1/2
3	4	3 1/2									18
4											
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13											
14											

प्राप्तांक

(शब्दों में)

अंकों में



2018- चौधरी चरण सिंह विश्वविद्यालय, मेरठ R

Date Stamp to be affixed here

मसूदा 'गुप्त'

(परीक्षार्थी द्वारा भरा जाए)

परीक्षा का नाम M.Sc. भाग/सेमेस्टर IInd-Sem
विषय Zoology
प्रश्न पत्र Genetics दिनांक 28/3/19

परीक्षार्थी का अनुक्रमांक (Roll Number)

उत्तर-पुस्तिका क्रमांक

KM-I-01-

M	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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C	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
D	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
E	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
F	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
G	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
H	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
I	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
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(परीक्षार्थी की श्रेणी)

- संस्थागत
- व्यक्तिगत
- बैक पेपर
- अंक सुधार
- भूतपूर्व
- एकल विषय

कालेज कोड

0	1	8
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2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9

नामांकन संख्या (Enrollment Number)

पेपर कोड

M	1	5	5	3	2	7	4	1		
0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1
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9	9	9	9	9	9	9	9	9	9	9

H-1067

परीक्षार्थी का पूरा नाम

Km. Tyodi

कक्ष निरीक्षक का नाम

Ajay

Sec-B

Q-6] Criminal Syndrome-

Poly

Type of Syndrome-

Sex-linked Syndrome

Condition-

$(44 + xyy)$

or
 $(44 + xyxy)$

- It's seen in Male only.
- In this condition one Y-Chro (or more than one Y-Chro.) is found present in male.
- In this condition male have very powerful in muscle strength, height & weight also.
- Height of Male is 6fe or more than 6 feet (6-7 feet.)
- But in this syndrome male have poor I.Q. level.
- Mantley retired condition.

◦ In this condition men behave like criminal (low i.Q. love season).

◦ So, it's also known as Criminal Syndrome

Dig:

◦ $22 + XY$

Normal Condition

$22 + \begin{matrix} \text{X} \\ \text{Y} \end{matrix}$

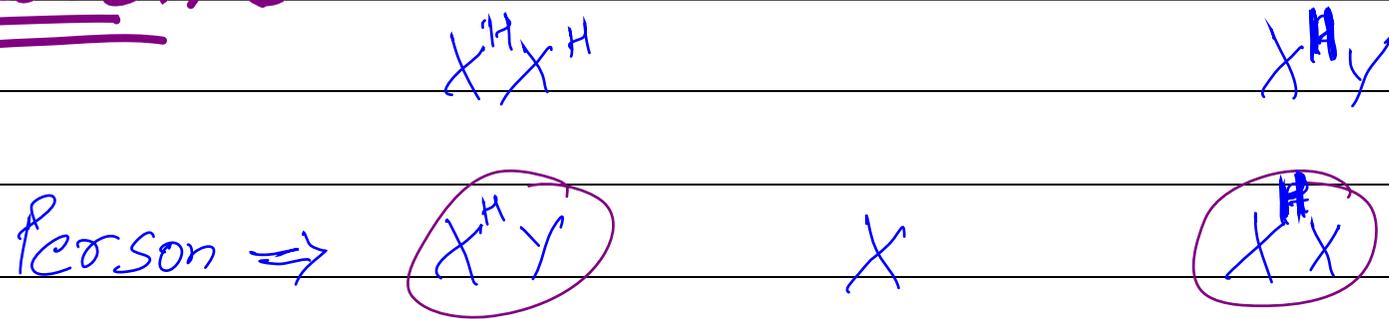
◦ $22 + XY$

$22 + \begin{matrix} \text{X} \\ \text{Y} \end{matrix} \begin{matrix} \text{Y} \\ \text{Y} \end{matrix}$

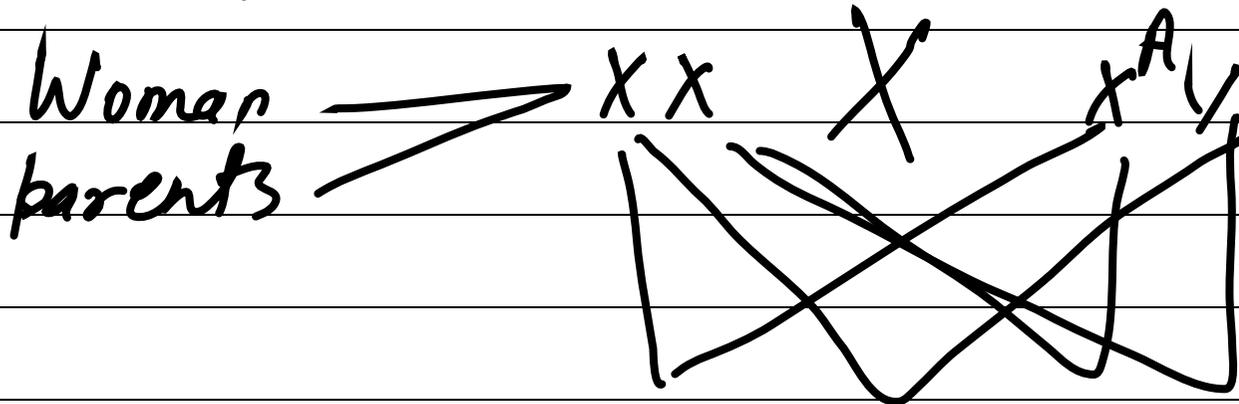
Q-8) A person whose mother was hemophilic,
 \ Marriage a woman whose father was

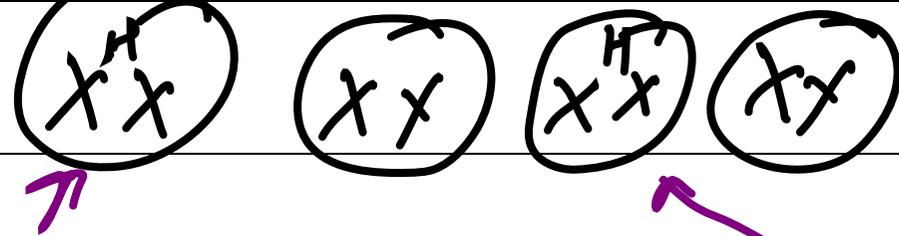
Hemophilic, calculate the freq. of
Hemophilic Son?

Calculation :-



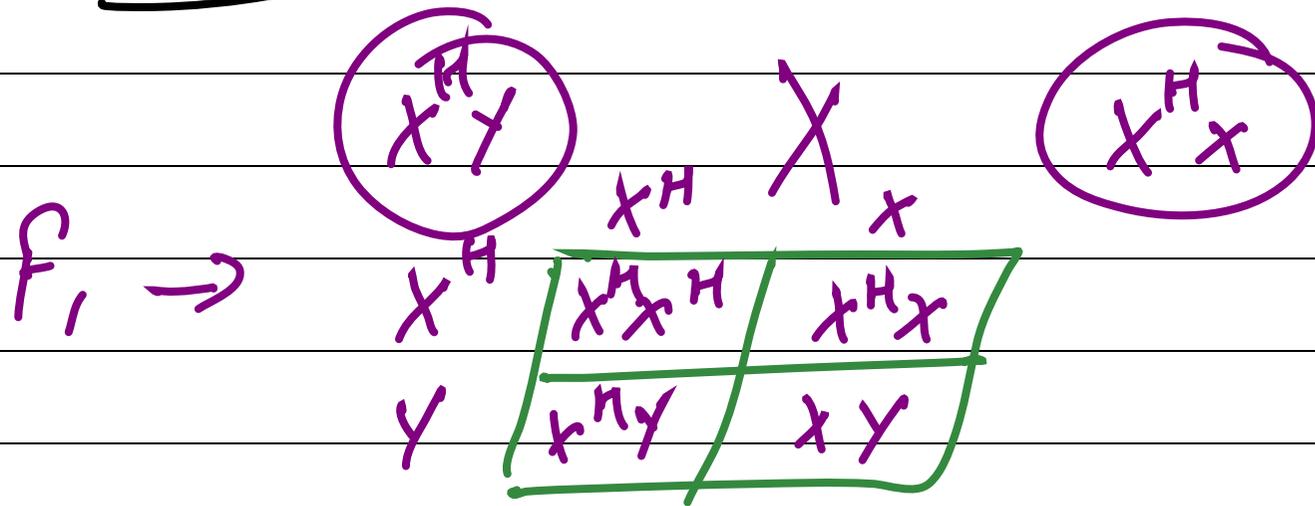
If we see in woman condition whose father was hemophilic





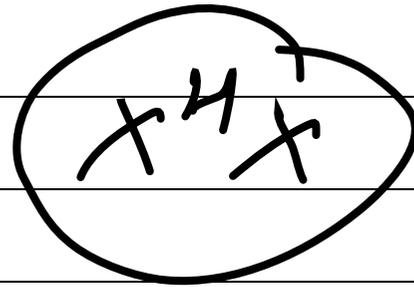
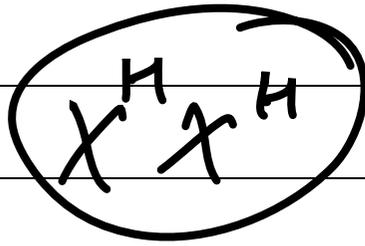
it's the woman or Also these

Now Calculate the % of Haemophilic
son

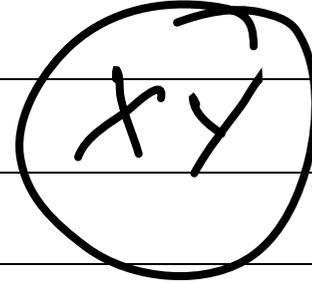
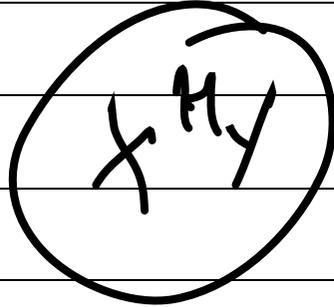


\rightarrow in these condition the following result is found :-

Progeny :-



→ Hetero. female



→ Hetero. male

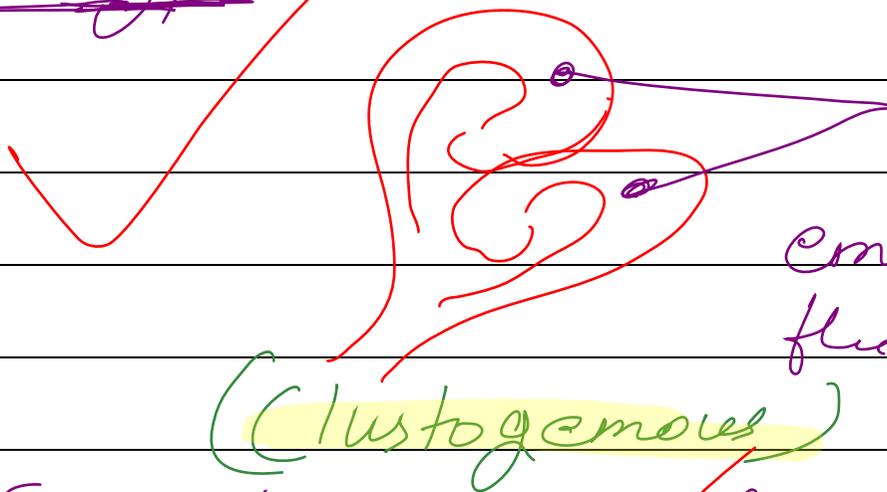
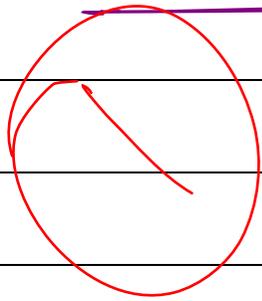
Result :- If we seen the son condition then we found that only one son is homo plitic.

$\left[\frac{1}{2} \right]$ % of Hetero. in son (only) → 50%

Sec - A

A3-1) Mendel selected pea plants the following reasons :-

1. In pea plants the flower is cleistogamous type



Flower petals embed outside the flower

(Cleistogamous)

2. The second reason is that - because emasculation (remove the anther parts) we can make cross both type cross & self fertilization.

In pea plants both type of fertilization is possible

Self fer.

Cross fer.

So these are the two reasons that why Mendel select Pea plants for their search.

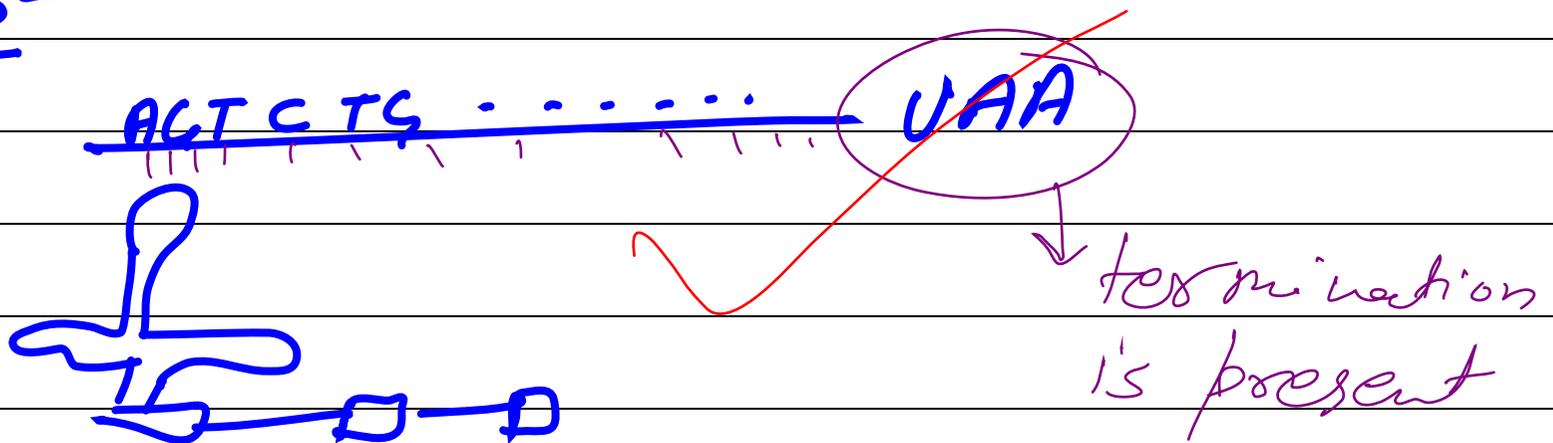
Q-2] Termination genetic code :-

1. UAA
2. UGA

3. UAG

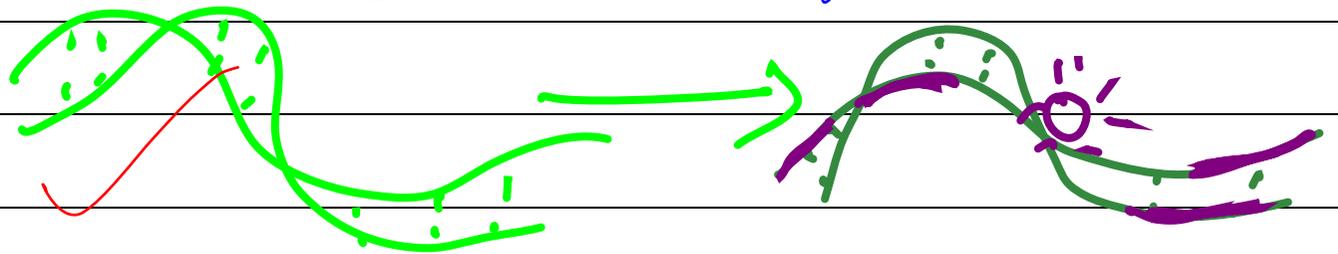
- These also known as Non-Sense Codon.
- These are the three type of termination codon.
- Where these codon are present in the Series there no any Amino acid coded.
- Because these are non-coding codon.

Like :-



In Direct - In this DNA use directly to formation

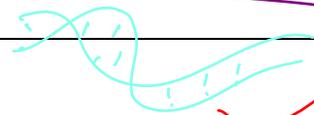
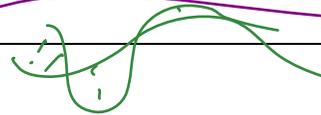
like



⊙ In Indirect process - In these process firstly DNA Heat then other DNA use to insert their

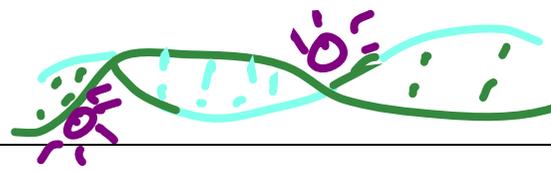
like

DNA 1 + DNA 2



make

Both DNA set



A-4) Use of PCR :-

• PCR \rightarrow Polymerase chain Reaction

• It's use for make several copies of one DNA (Genetic material).

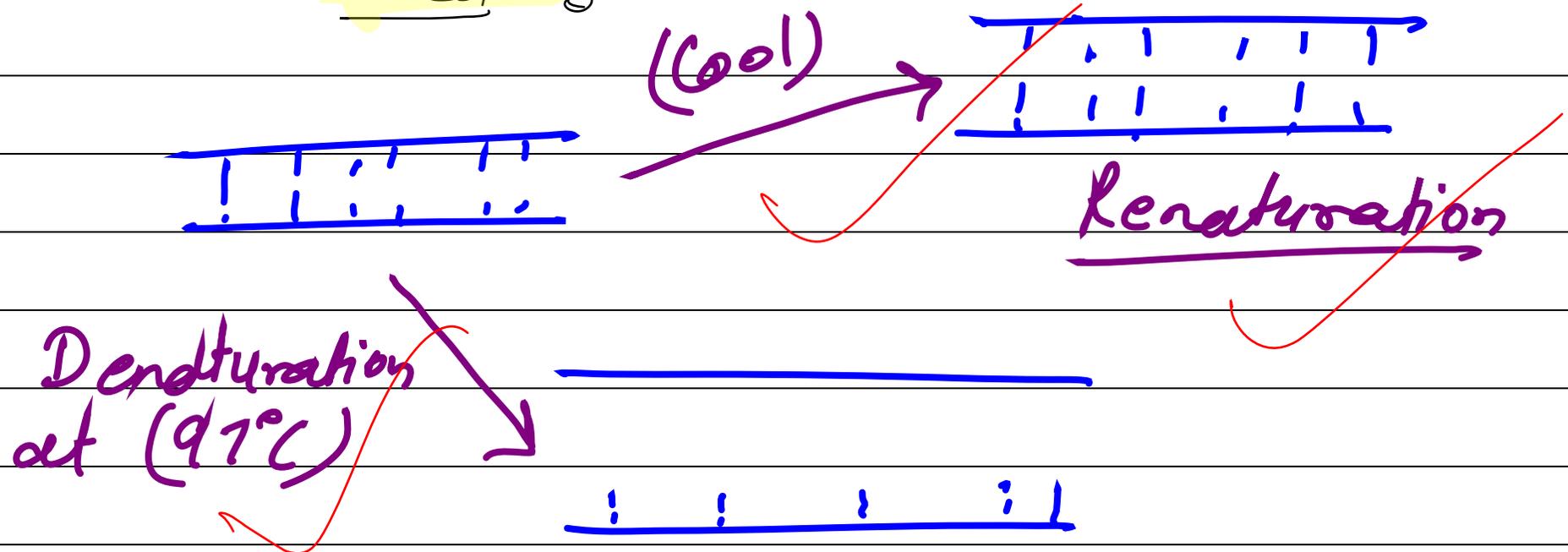
• Methodology :- That how it's work -

Firstly :- DNA heat at (95-98°C) for Denature

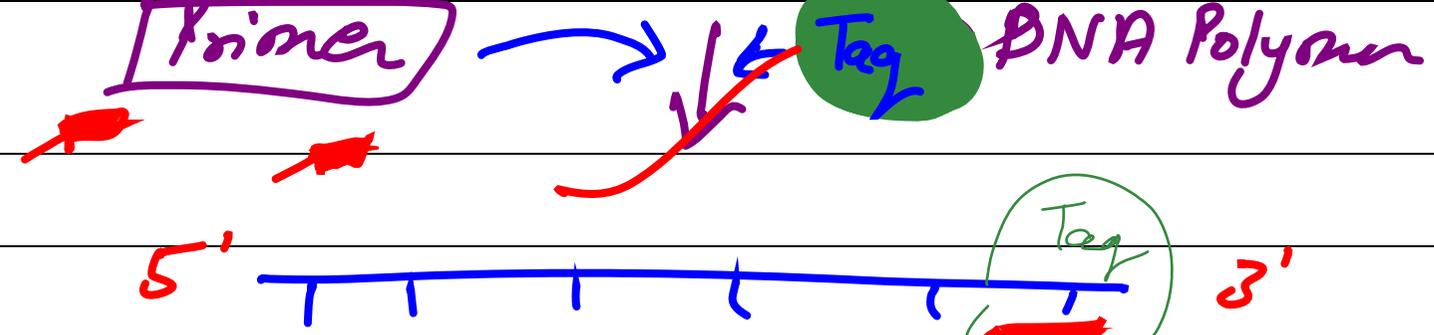
↓

- In this tech. Thermus aquaticus bacteria is used. (Which stop DNA denatured)

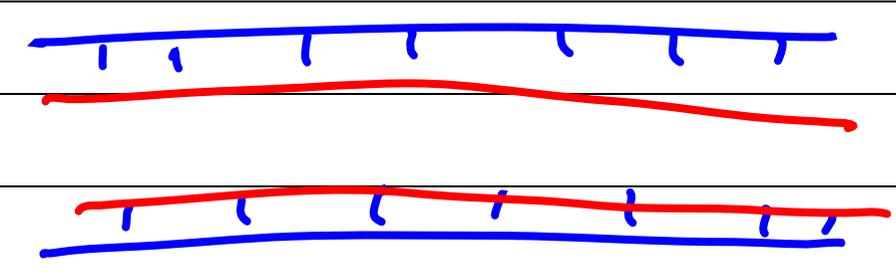
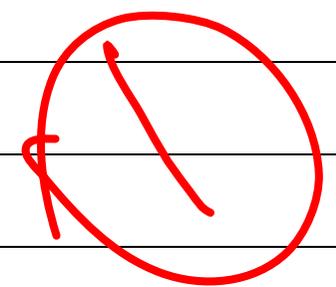
- DNA poly is used & Primer is also used.



Annealing



Sequencing



make 2 DNA
seq. from
one

Any-5) Co-dominance

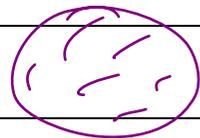
- Co-dominance is a dominance where both character represent positively

- When we cross between two Homozygous then the result that both character is come out in the result.

- Eg^o - Colour skin of Rhino

RR

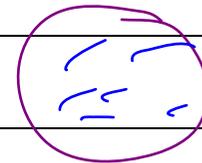
Black



x

rr

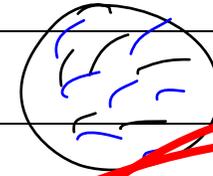
Gray



In Progeny

F₁

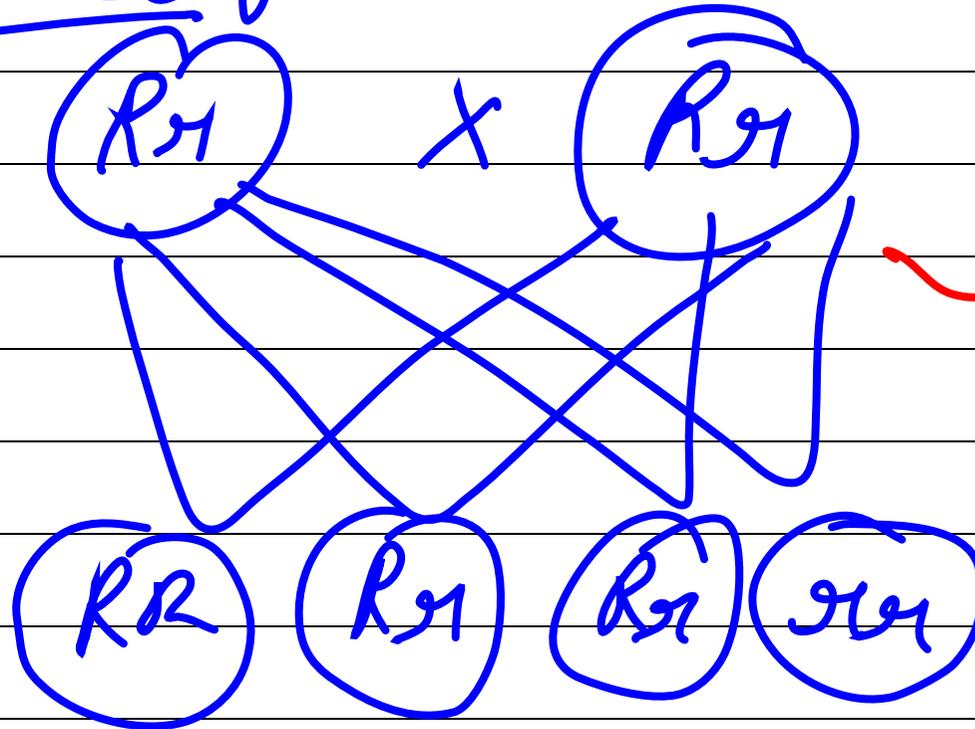
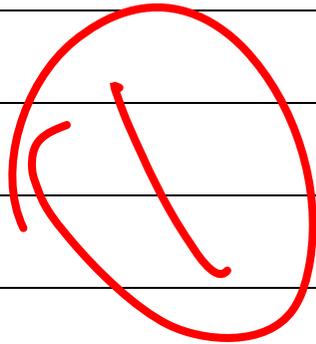
	R	R
♂	Rr	Rr
♀	Rr	Rr



Both colour present

Cross self

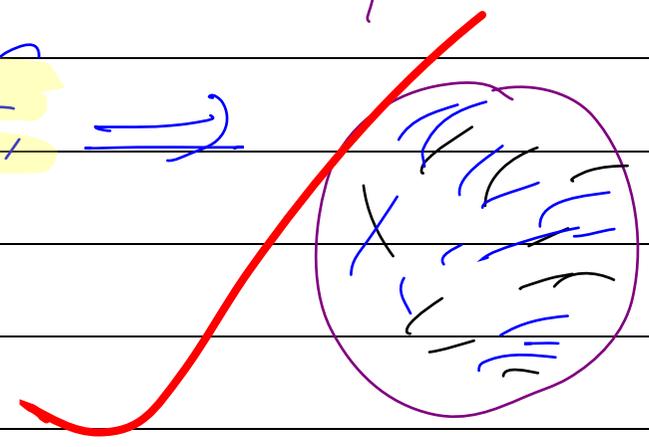
F₂



• In F₁ Progeny all R_1 is present.

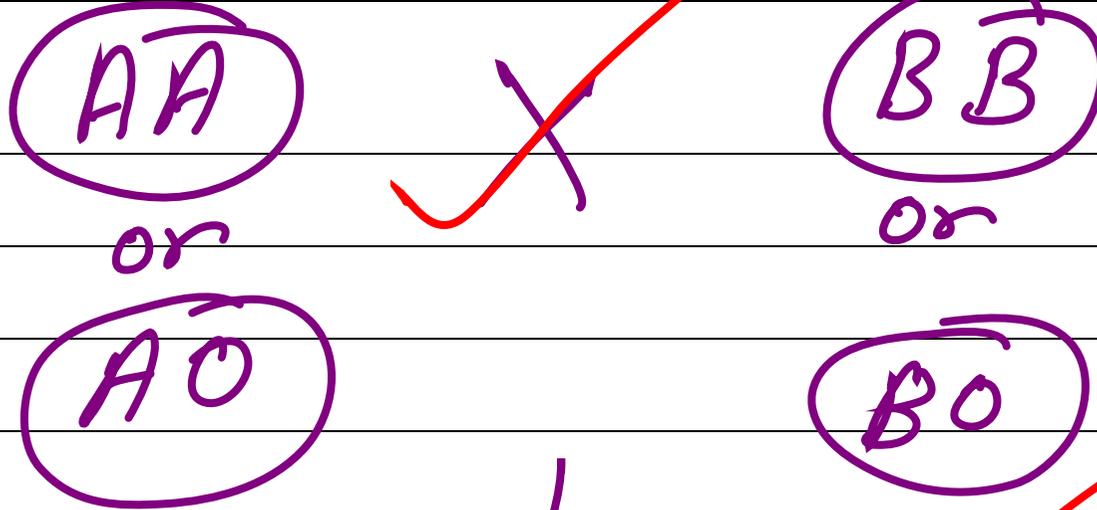
• The colour of these ^{hairs} are both Black & Gray hairs is present their skin.

→ Result in F₁ ⇒



Both colour is present their

Eg^o - Human blood group^o



$F_1 \rightarrow$

	A	A
B	AB	AB
B	AB	AB

Both have AB type Blood group.

Section - C

A3-10 Gene transfer methods :-

Summary :-

• Introduction

- Transformation
- Transduction
- Conjugation

• Introduction :-

• Gene transfer is a method where we discuss/studied that how a gene transfer one generation to the next generation.

• DNA is heridity material.

→ • Types of gene transfer :-

① Transformation

② Transduction

③ Conjugation

→ Transformation :-

• Given by :- Griffith

• Material requirement :-

Animal :- Ratus norvegicus

Bacterial :- Pneumococcus pneumoniae

• Strain :- R-Strain (Rough)

↓
non-virulent

S-Strain (Smooth)

↓
Virulent

Method :-

1. Rat + R-strain → Mice + R found
Live

2. Rat + S-strain → Mice not
Live + S found

3. Rat + S-strain (heat killed) → Mice Live +
not any strain found

4. Rat + R-strain → Mice dead (S-strain found)
+ S-strain (heat killed)
After these Griffith gave ans that there is some other material which change R-strain into S-strain.

o After these the true scientist
explain these experiment :-

Name :- Avery, McCord, McCarty

1. R-strain + RNAase $\xrightarrow[\text{in mouse}]{\text{inject}}$ Mouse died
 +
 S-heat killed

2. R-strain + Proteinase $\xrightarrow[""]{}$ Mice died
 +
 S-heat killed

3. R-strain + DNAase $\xrightarrow[""]{}$ Mice live
 +
 S-heat killed

Note :- When DNAase added with strain
 then mice live it's proof

that DNA is a genetic material.

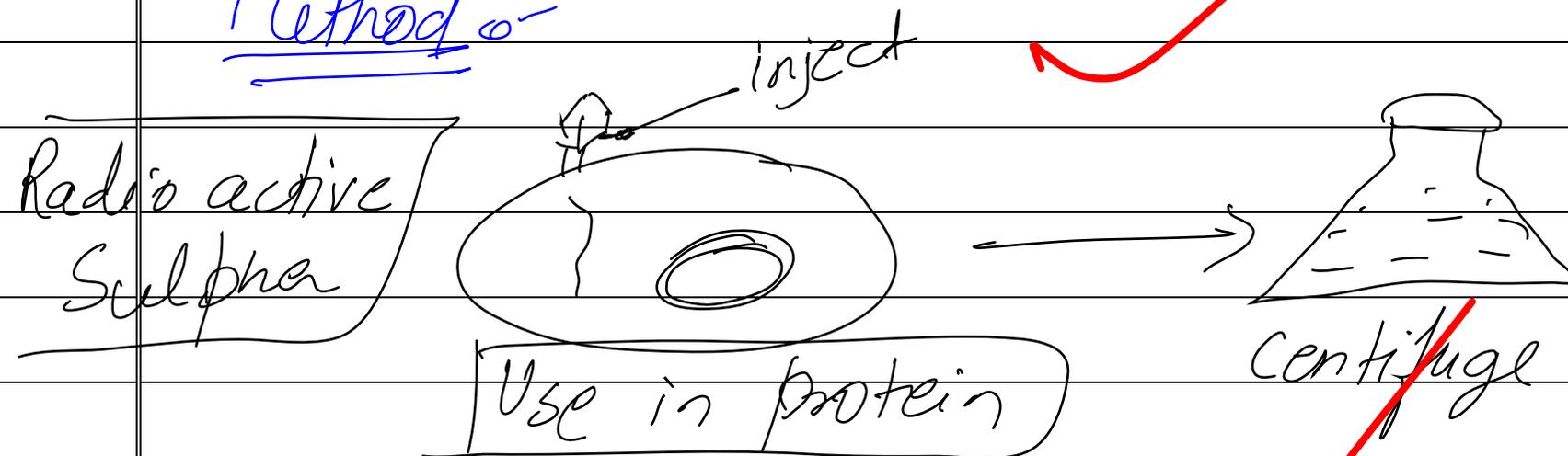
Transduction :-

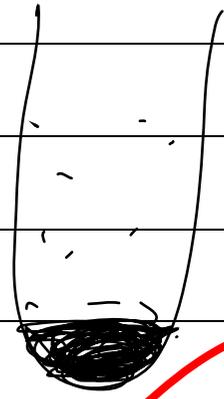
Use :- Radio active Sulphur & Phosphorus

Bacteria :- Bacteriophage

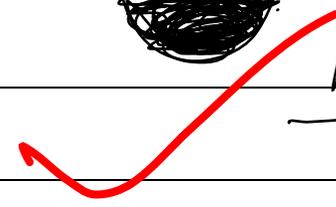
Given by :- Hershey & Chase

Method :-

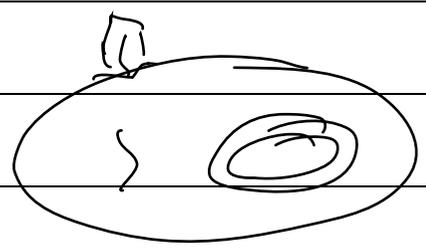




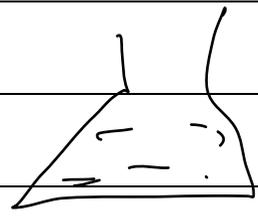
Pellets



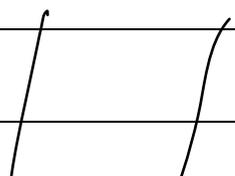
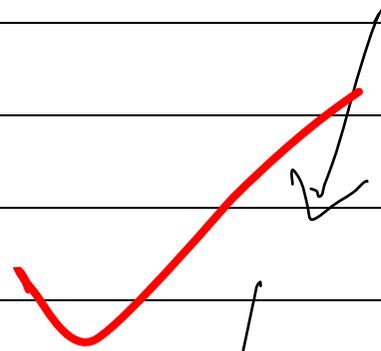
Radio active Phosphorus

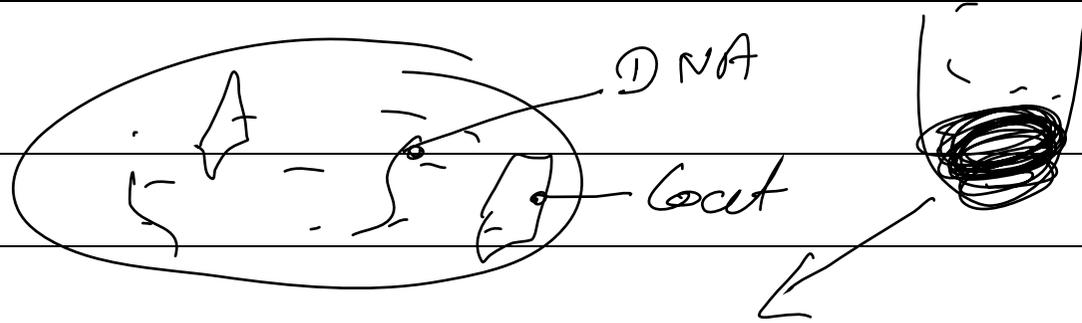


Use in DNA



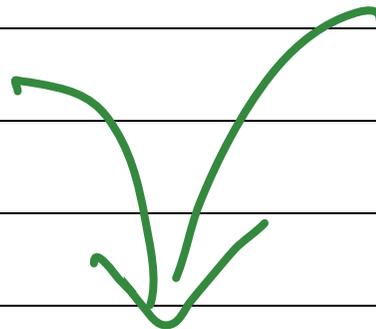
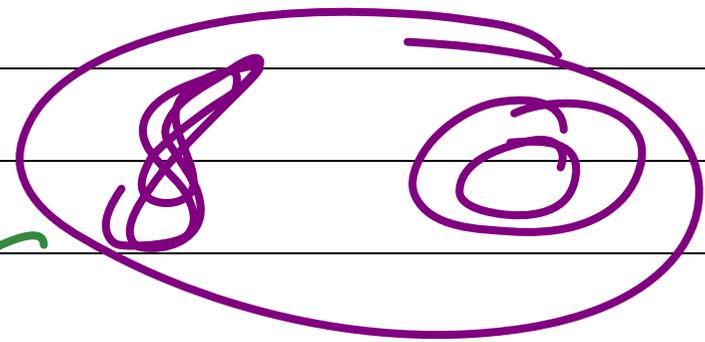
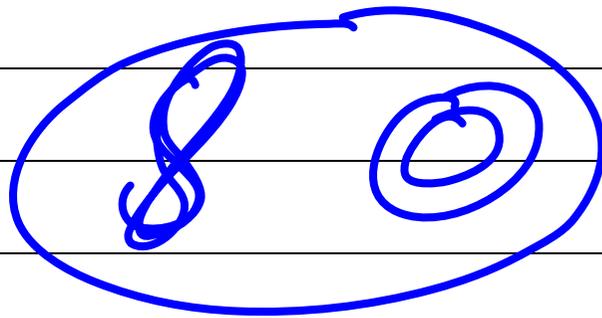
Centrifuge

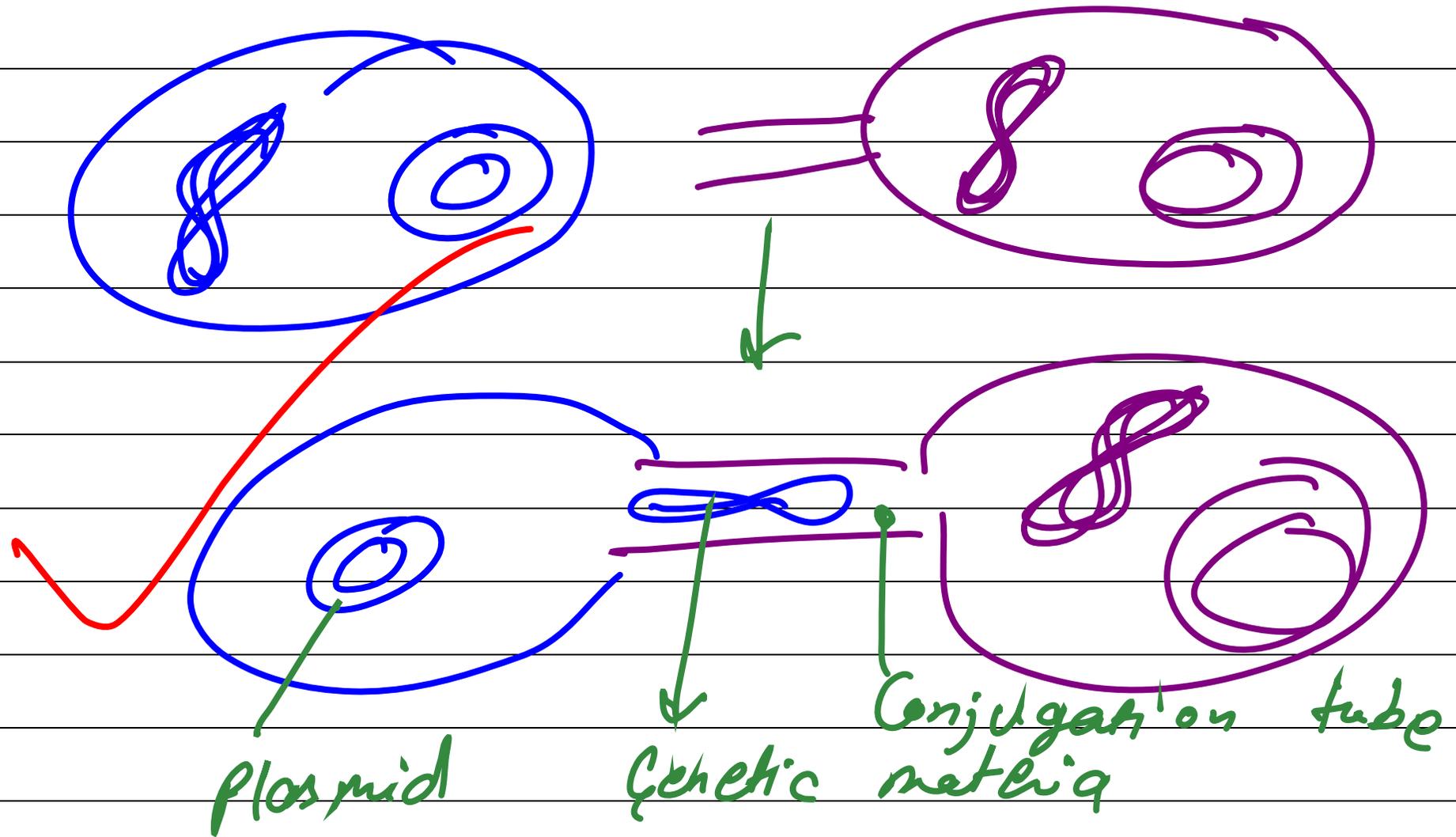




• in plasmids some sequences found which are the DNA •

Conjugation •-

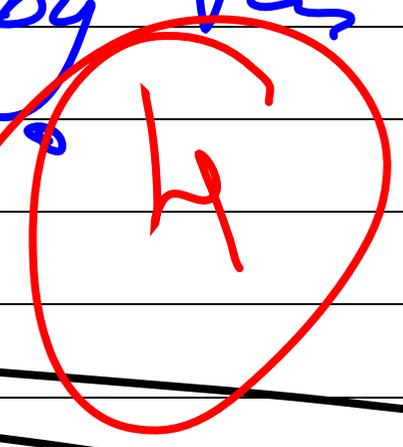




Note :- In these Bacteria change their Genetic material for reproduction.

• Conjugation tube formed by the
contact of bacteria

Other methods of virus also need to be off



Q-11) Genetic disorder :-

Summary :-

• Introduction

- Autosomal disorder

- Sex-Chro. disorder

Chromosomal
single gene is
Dominant
Recessive

→ Introduction ○

○ In Genetic disorder change in
the no. of chromosomes. ~~at~~
~~the time of~~

○ In these conditions Chro. no
separated clearly (in meiosis)

They are two type :-

• Autosomal :-

• Which occurs in the Autosomal
Chro. no. changing,

Eg :- Down syndrome

Condition :- (21 group trisomy)

Total no. of Chro \rightarrow (25 + 24) trisomy
of 21

2. Cri-de-Chat :-

Condition :- (Monosomy)
($2n-1$)

- It seen in baby birth time.
- Baby cry like cat.

③ Edward :-

Trisomy of 18 (40 up)

- $(2n+1)$ in 18 Group

- In these one choo. adgl with

Autosomal.

- face, neck small.

4. Patau ⁺₀₋

Trisomy in 13 Group.

$o(2n+1)$ in B group.

- They are mentally retired.
- Not fertalization possible.

Sex-linked disorder :-

- Which syndrome during the effect of XY Choo.

1. Super male :-

(22 + X YY)

(22 + X YYY)

Condition

- They are Criminal type in birds.
- High weight & height 7 feet.

2. Super femal :-

(22+XXX) → Condition

3. Cline filter :-

(22+X.Y)

- it's seen in male.
- Secondary Sexual character develop in male.

4. Turner syndrome :-

$(22 + \cancel{X} \underline{0})$

- One X is less in female.
- They are not fertile.

Note :-

sterile

(not given birth of baby)

All Syndrome are

except

Turner syndrome.

~~Normal~~

① All syndrome are mentally
retired except
Super female.

34

