DAY
2ND

SUPER
30

CLASS 12TH

BIOLOGY

Green -Red colour blindness is a sex linked disease. The genotype of carrier mother is :

A. XXc
B. XX
C. XcX
D. XcXc

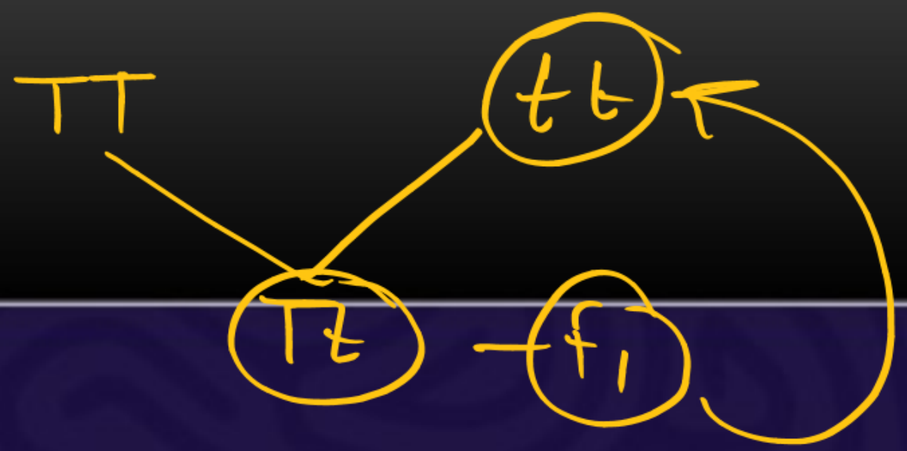
→ X-linked Recessive

X_c

XX_c

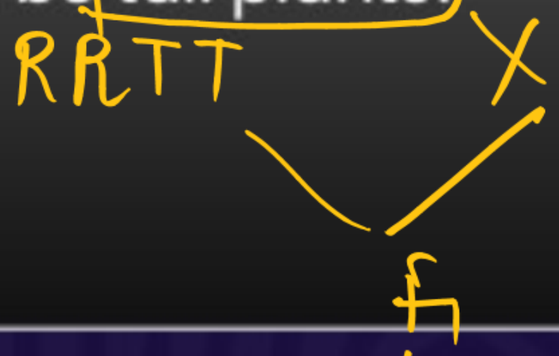
A cross between the F1 progeny and the homozygous recessive parent is known as

(A) test cross
(B) reciprocal cross
(C) dihybrid cross
(D) monohybrid cross



A cross is made between pure line tall pea plants with round seeds and a short pea plant with wrinkled seeds. In F2 generation , out of 80 plants how many plants are likely to be tall plants?

A. 15
B. 20
C. 45
D. 60



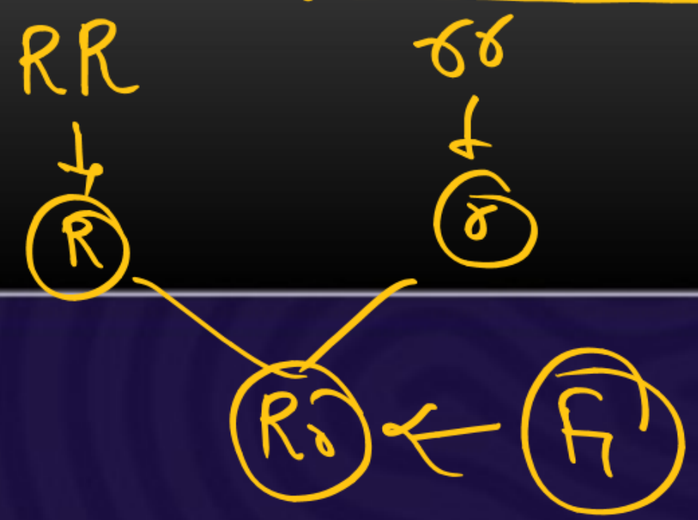
60 = $\frac{3}{4} \times 80^{20}$ $\frac{1}{4}$

F2 → 3 : 1

dominant

A pea plant with homozygous round seeds was crossed with homozygous wrinkled seeded plant. The genotype of the F1 hybrid id :

A. Rr
B. RR
C. rr
D. ro



RRTT X rrtt

In a Mendelian experiment :- A pure variety of red flower and tall pea plant are crossed with pure, white and dwarf pea plants. Explain with the help of Punnett square chart.

(i) What is the genotype and phenotype of their offspring formed in F1 generation? → RrTt → Red Flower & tall plant

(ii) When the F1 members are self crossed? What are the possible offspring formed in F2 generation? Red tall / Red dwarf / white tall / white dwarf

(iii) Which law (principle) of inheritance is proved in the experiment? Write the law.

law of independent assortment

RRTT → RT

rrtt → rt

RrTt

	RT	Rt	rT	rt
RT				
Rt				
rT				
rt				

9 : 3 : 3 : 1

Write the possible genotypes of human ABO type blood groups. Name the types of expression of alleles.

multiple allelism → I^A, I^B, i

Codominance (AB Blood Group)

I^A, I^B dominant; i Recessive

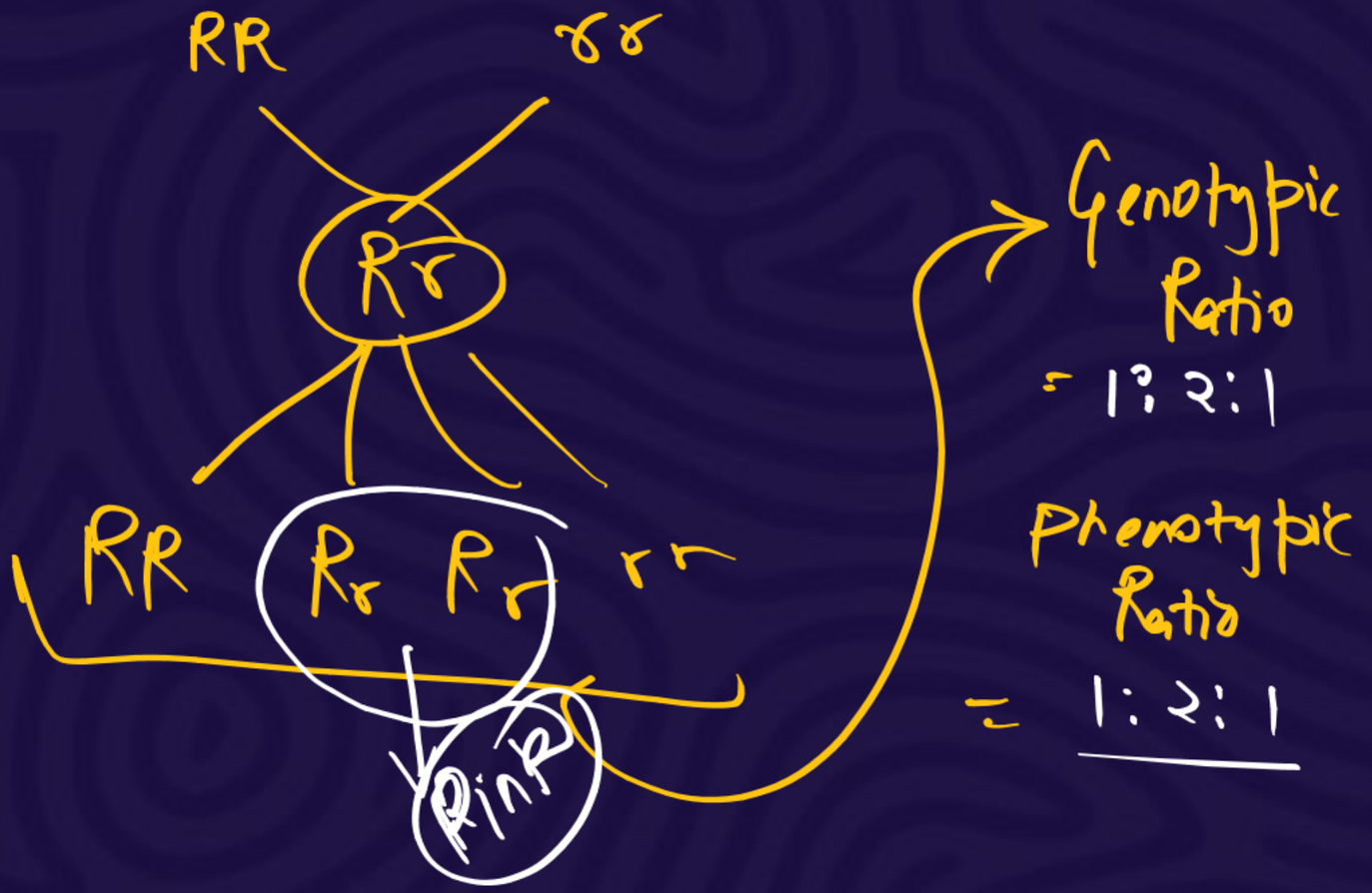
	Blood Group	Can Receive from	Donate
$I^A I^A$	A	A, O	A, AB
$I^A i$	A	A, O	
$I^B I^B$	B	B, O	B, AB
$I^B i$	B	B, O	
$I^A I^B$	AB	A, B, AB, O	AB
ii	O	O	A, B, AB, O

AB → Receiver

O → Universal donor

A snapdragon plant with red flowers (RR) is crossed with a plant with white flowers (rr). Work out the cross upto F2 generation. Find out the phenotypic and genotypic ratio.

→ incomplete dominance



The phenotypic ratio, in case of incomplete dominance in Mirabilis jalapa, is

(A) 9 : 3 : 3 : 1

(B) 3 : 1

(C) 1 : 4 : 6 : 4 : 1

(D) 1 : 2 : 1

Define Multiple alleles with appropriate example. Distinguish between multiple alleles and Codominance giving suitable examples.

More than two alleles

two alleles are dominant at some time

Explain chromosomal theory of inheritance.

- Given by :- Sutton and boveri

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Many organisms with separate sexes have a pair of specific type of chromosomes called sex chromosomes. In humans, ____A XX_ are responsible for homogametic female, and ____B XY_ are responsible for heterogametic male. In birds, it is ____C ZW_ for females and ____D ZZ_ for male chromosomes.

homo – same
hetro – diff

→ Chromosomal / Nuclear

Study the karyotype given below and answer the questions that follow :

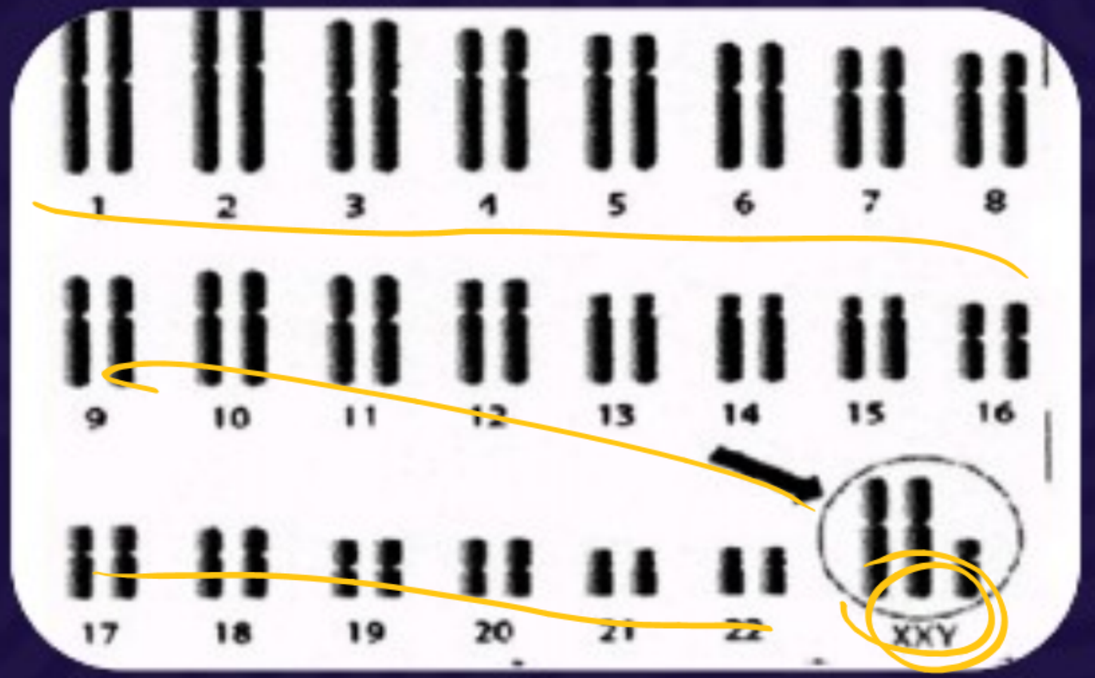
(a) What is this disorder known as ? → Klinefelter

(b) How many chromosomes are present in the individuals with this disorder ? (44 + XXY)

(c) State one typical feature of this syndrome.

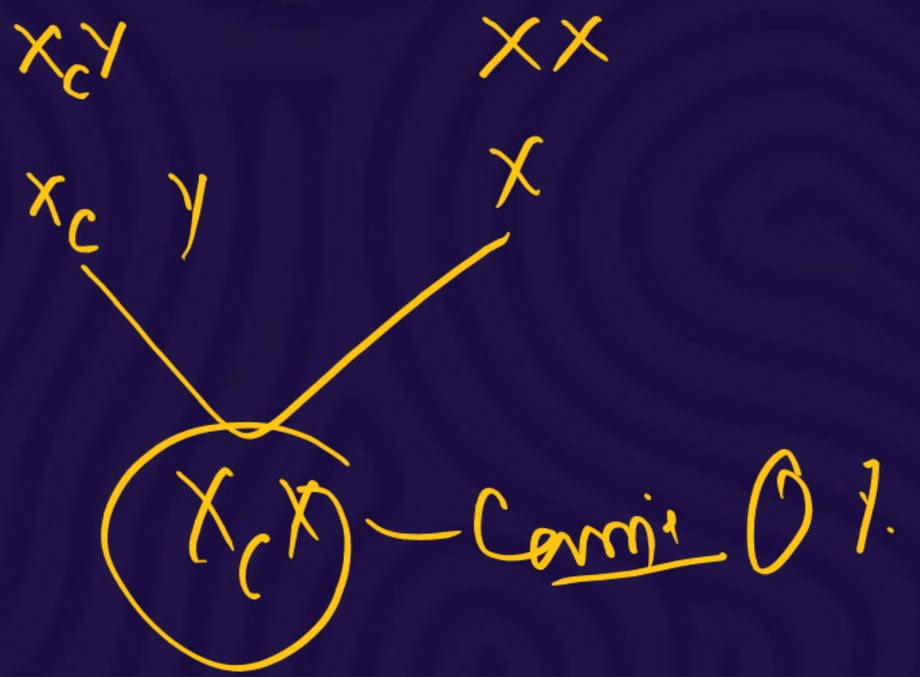
↓

Sterile male, tall, Gynaecomastia



A. "Red-green color blindness is a sex linked defect". Justify the statement. → X-linRed - Recessive disorder, Genes → Rr or XAchoon.

B. A colourblind man marries a normal woman . what are the chances of their daughter having the disease?



Write any two symptoms observed in patients suffering from heamophilia.

- (Bleeder's disease) → X linked Recessive disorder
- Clouting – do not occur
  → blood do not Stop. bleeding continued
- Repair of tissue – Slow.

Long qn

Give the karyotypes of the following :

1. Normal male → 44 + XY → No
2. Klinefelter's syndrome → 44 + XXY → Sex-chromosomal disorder
3. Down's syndrome female → 45 + XX → Autosomal
4. Turner's syndrome → 44 + XO → Sex-chromosomal.

Also classify them into autosomal and sex-chromosomal disorders

Normal female 44 + XX

Fill in the blanks

1. The chromosomal composition of klinefelter's syndrome is 44 autosomes + ___XXY___ chromosomes.
2. Symptoms of klinefelter's syndrome are ___tall____, mentality retarded _mak___, sterile and shows _Gynaecomastia_.

Name of the technique used for detecting genetic disorders in a foetus is

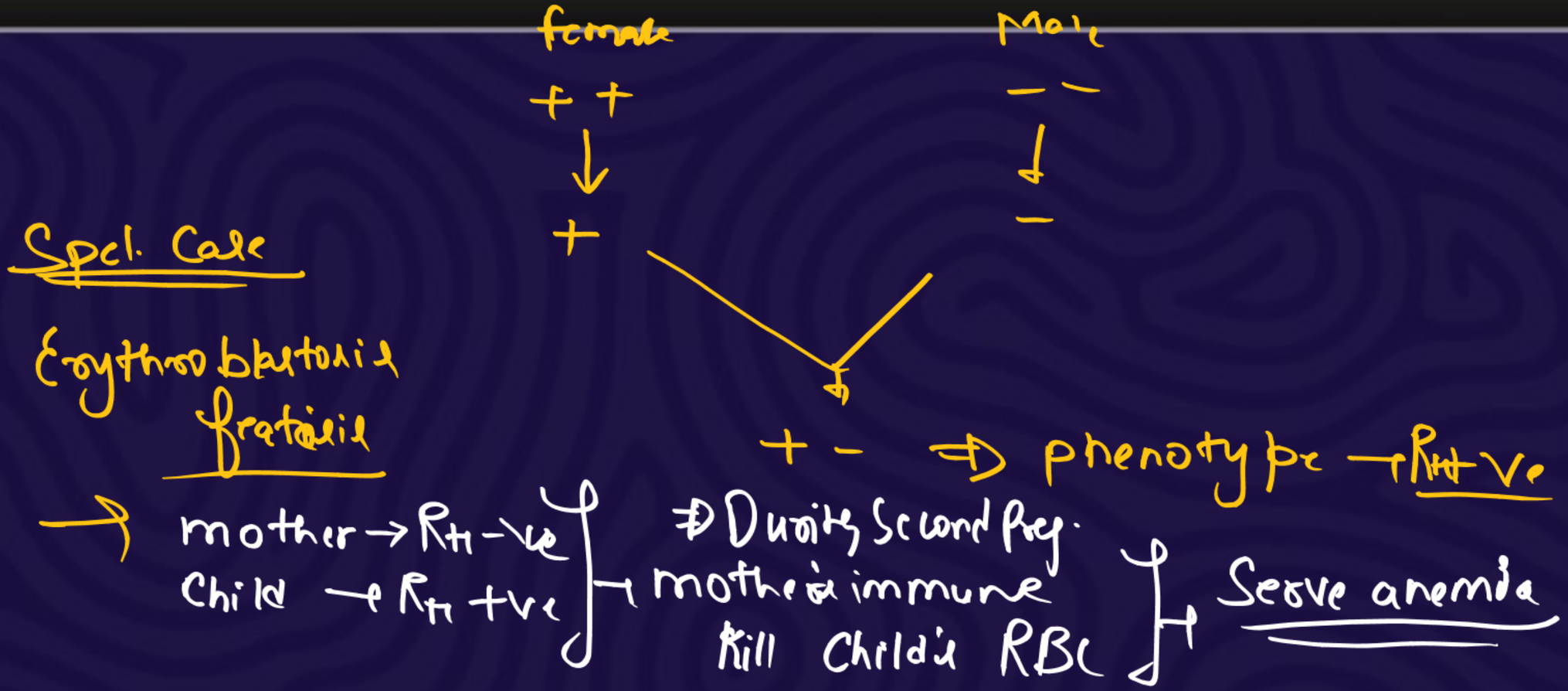
(A) amniocentesis
(B) ultrasound
(C) X-ray
(D) MRI

Adv- • Early diagnosis
• Informed decision

Disadv → • may lead to miscarriage

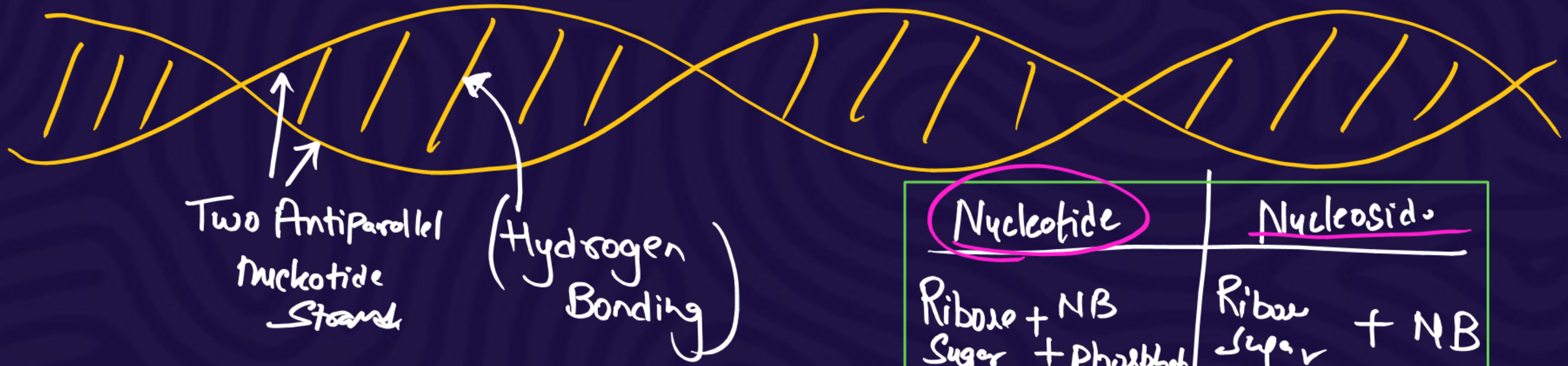
India → Gender
↓
Female foeticide

A homozygous Rh+ lady married to Rh- man with the help of chart explain the possible inheritance of Rh- factor in their offspring.



(a) Draw a neat diagram of a double-helical structure of DNA and label the main components.
(b) Distinguish between nucleoside and nucleotide.

DNA → Deoxy Ribonucleic Acid → "Poly-nucleotide"

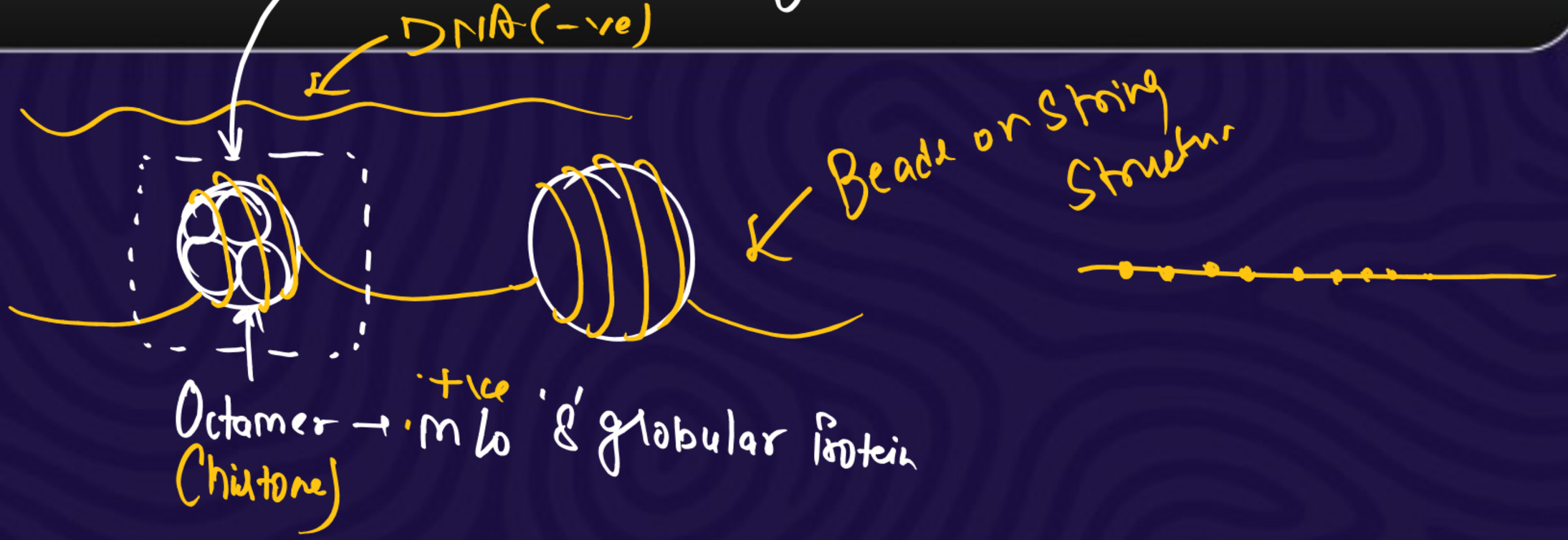


Nucleotide	Nucleoside
Ribose Sugar + NB + Phosphate Group.	Ribose Sugar + NB

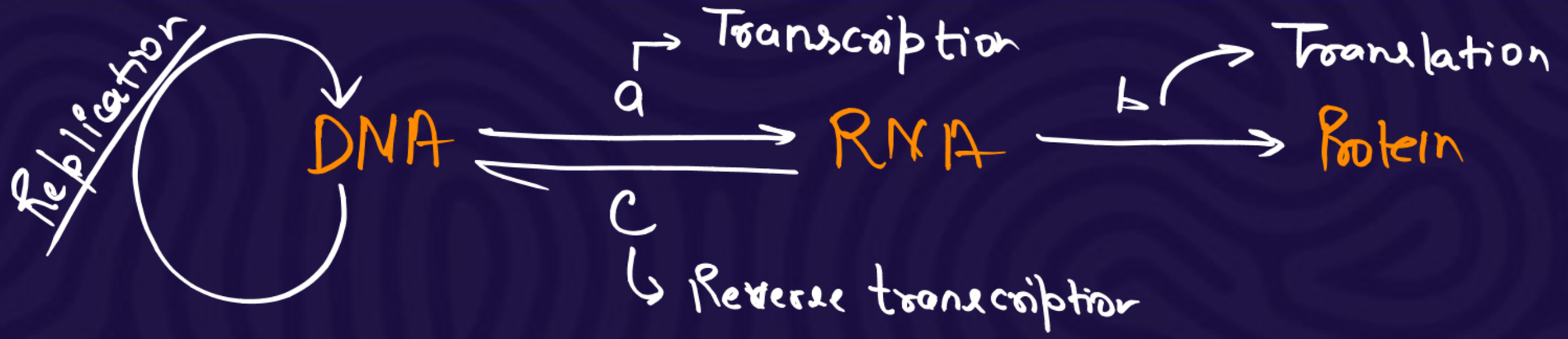
Explain the location and the function of the following :

A. Nucleosome
B. Octamer
C. r-RNA

r-RNA — ribosomal RNA — help in functioning of Ribosom



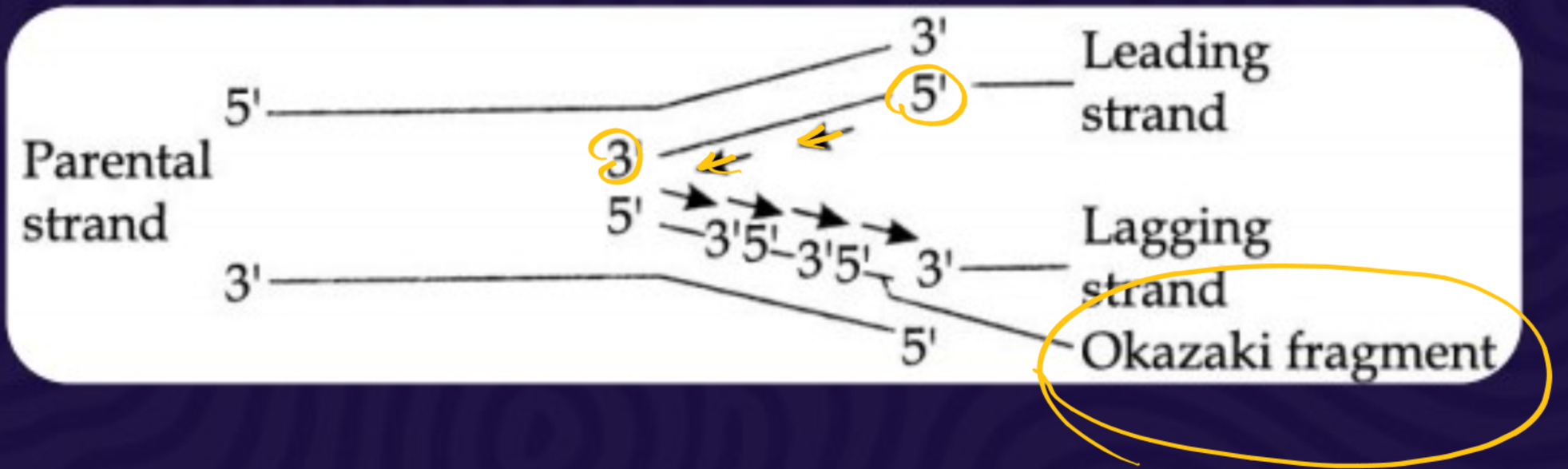
What is central dogma of molecular biology ? Express it with the help of flow chart.



Sequenced Stages a DNA follows to express itself is R/a Central Dogma

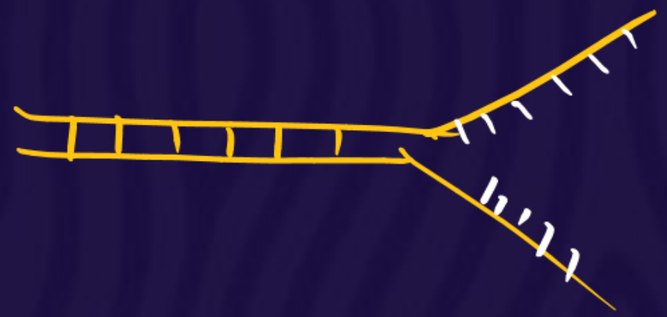
Observe the given diagram and answer the questions that follow :
(a) In which direction does the enzyme DNA polymerase catalyses DNA replication 5' to 3' or 3' to 5' ? 5' → 3'
(b) Which enzymes joins the Okazaki fragments to form a complete DNA strand.

→ DNA ligase



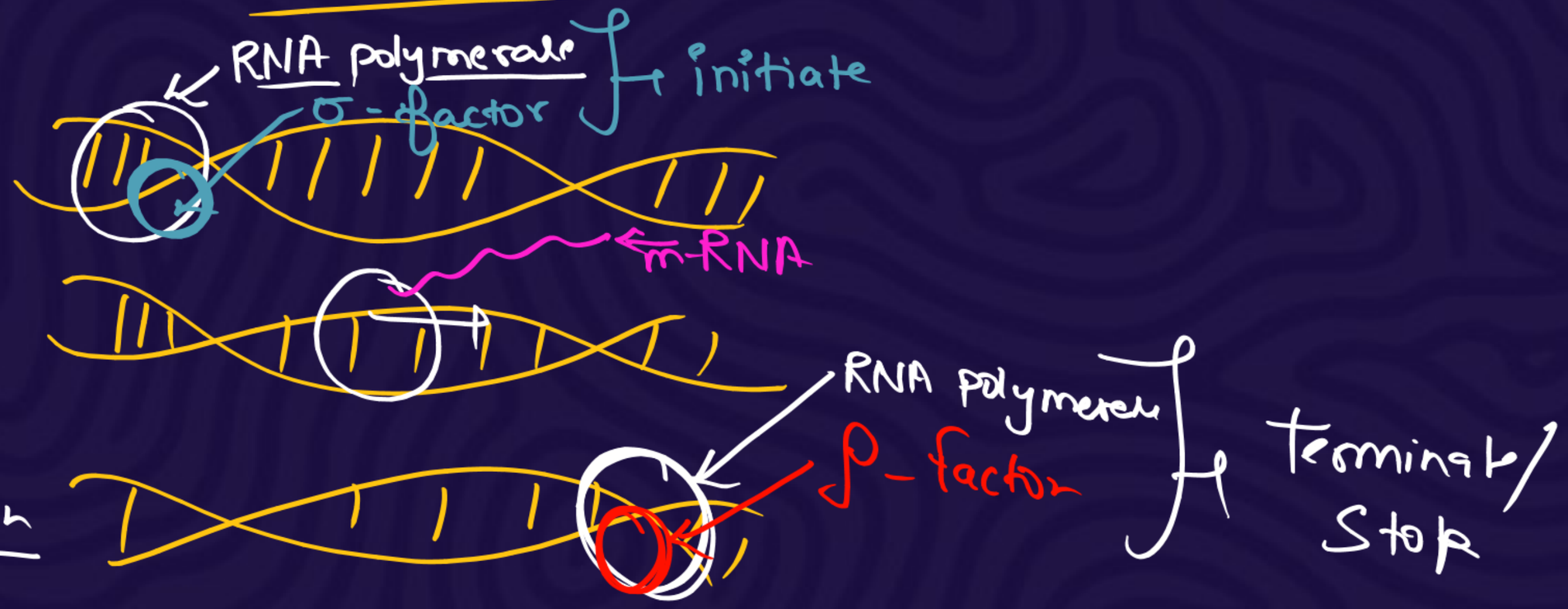
Fill in the blanks

During replication process in DNA the two strands of DNA are separated by the action of Helicase ___. Enzyme Topoisomerase holds it. Thus Replication fork formed . enzyme helps in forming primers. (Helicase)



Explain the process of transcription with the help of flow chart.

DNA → RNA



Pick the mRNA codon which will pair with the anticodon UCA of tRNA.

(A) GAU
(B) AGU
(C) AUG
(D) TGT

DNA	RNA
A = T	A = U
C ≡ G	C ≡ G

Two hydrogen

3 hydrogen bond.

The formation of proteins from RNA is known as :

(A) Translation
(B) Transcription
(C) Transformation
(D) Transduction

RNA → Protein

Pick the odd one out.

A. UGA → Stop
B. AUG → Start
C. UAG → Stop
D. UAA → Stop

Start → AUG → also Code for methionine

Stop → UAA, UAG, UGA

In 1984 Alec Jeffreys, invented a technique which could distinguish the DNA of a person from that of another and called this technique as ____A____. This technique is now used for ____B____ of crime, for example identifying correctly the ____C____ in murder or to solve ____D____ disputes.

Observe the Lac operon diagram given below and answer the questions that follows.

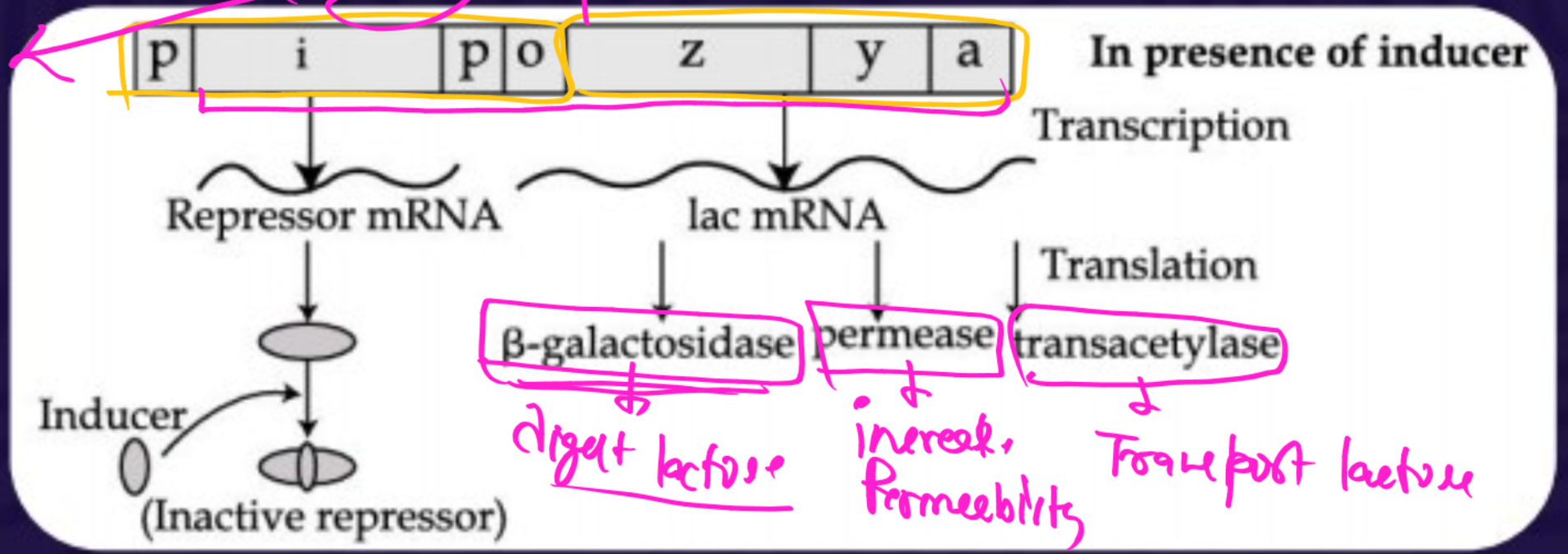
(a) Which substance acts as inducer in this operon ? → lactose

(b) Where does RNA polymerase bind to initiate transcription ? Promoter

(C) What are the genes z, y, a called as ? ZYA

Lac operon

Lactose



SUPER 30 BIOLOGY

HW Qn   Ex:- Codominance → '2'

THANK YOU

KEEP STUDYING AND KEEP GROWING

Class Kaisi lagi ?   Mark