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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 II
(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
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13											
14											

प्राप्तांक

(शब्दों में)

अंकों में

जाँचकर्ता के हस्ताक्षर एवं तिथि

परीक्षक के हस्ताक्षर एवं तिथि



2018-

भाग-3

चौधरी चरण सिंह विश्वविद्यालय, मेरठ

आवश्यक विवरणों के लिए पृष्ठ भाग देखें

Date Stamp to be affixed here

मार्गदर्शक

(परीक्षार्थी द्वारा भरा जाए)

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

परीक्षार्थी का अनुक्रमांक (Roll Number)

उत्तर-पुस्तिका क्रमांक

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KM-I-01-

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(परीक्षार्थी की श्रेणी)

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

कालेज कोड

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नामांकन संख्या (Enrollment Number)

पेपर कोड

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परीक्षार्थी का पूरा नाम

Sarjana Singh

कक्ष निरीक्षक का नाम

Aryi Singh

Section - A

Ans 1 → Mendel selected pea plant because in pea plant they define seven traits of characteristics i.e.,

Characters

Dominant

Recessive

Height

Tall

Dwarf

Pod colour

Green

Yellow

Pod shape

Round

Wrinkled

Flower colour

Red

White

Position

Axial

filament

Seed colour

Yellow

Green

Seed shape

Smooth

Wrinkled

Because in this self & cross population both are present to express the pea plant — (1)

Ans 2 → Termination Genetic Code are —

There are 3 termination codon which is also known as stop codon.

- UAA — Ochra
- UAG — Amber
- UGA — Opal

When stop codon comes in the sequence then the sequence is stopped.

Ans 3 GISH :-

- GISH means genomic in situ hybridization.
- Which is used in the animals.
- They are the technique to transfer the gene in the animals.

- It is very helpful to transfer the gene with the help of probe.
- The probe identify the genes & then transfer in the animals.
- In this the fish technique also used which is fluorescent in situ hybridization.

Ans 43 Use of PCR :-

- PCR means polymerase chain Reaction.
- In PCR we identify the small piece of DNA.
- In this the small piece of DNA amplified to make multiple copies of DNA.
- And it is used in crimes i.e, when the criminal do a crime then there is the proof that is hair, blood etc.

- And the DNA piece is so small than we amplified the DNA & make the multiple copies of that DNA which is used to identify the criminal.

- In this three steps are used to make multiple copies of DNA -

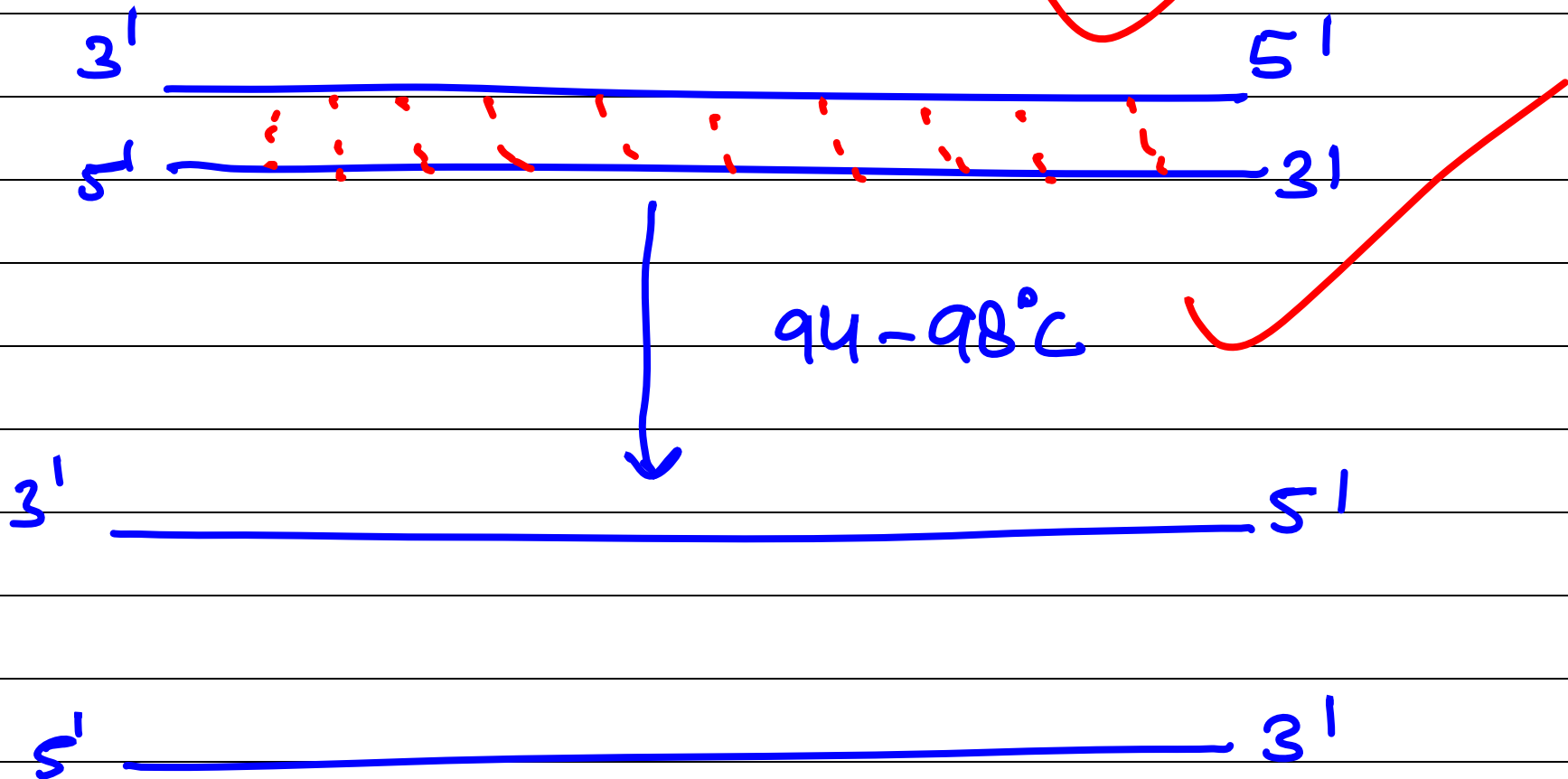
→ Denaturation

→ Annealing

→ Extension

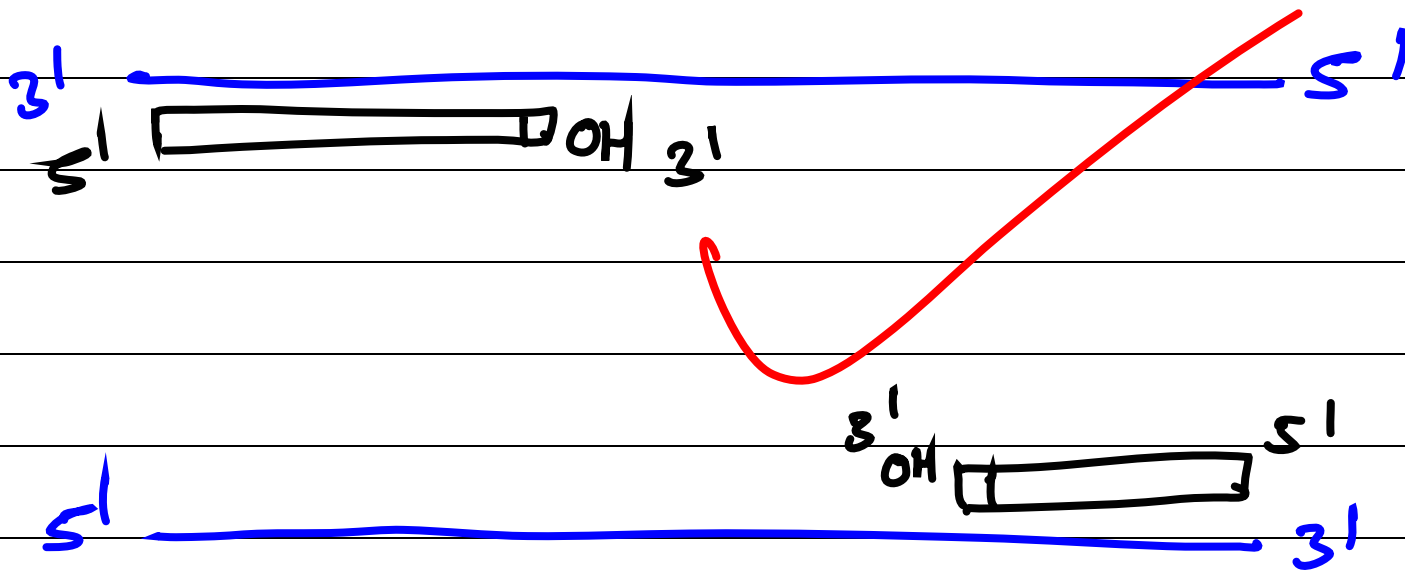
→ Denaturation -

In denaturation the two strands of DNA are separated with the use of high temperature i.e., $94-98^{\circ}\text{C}$.



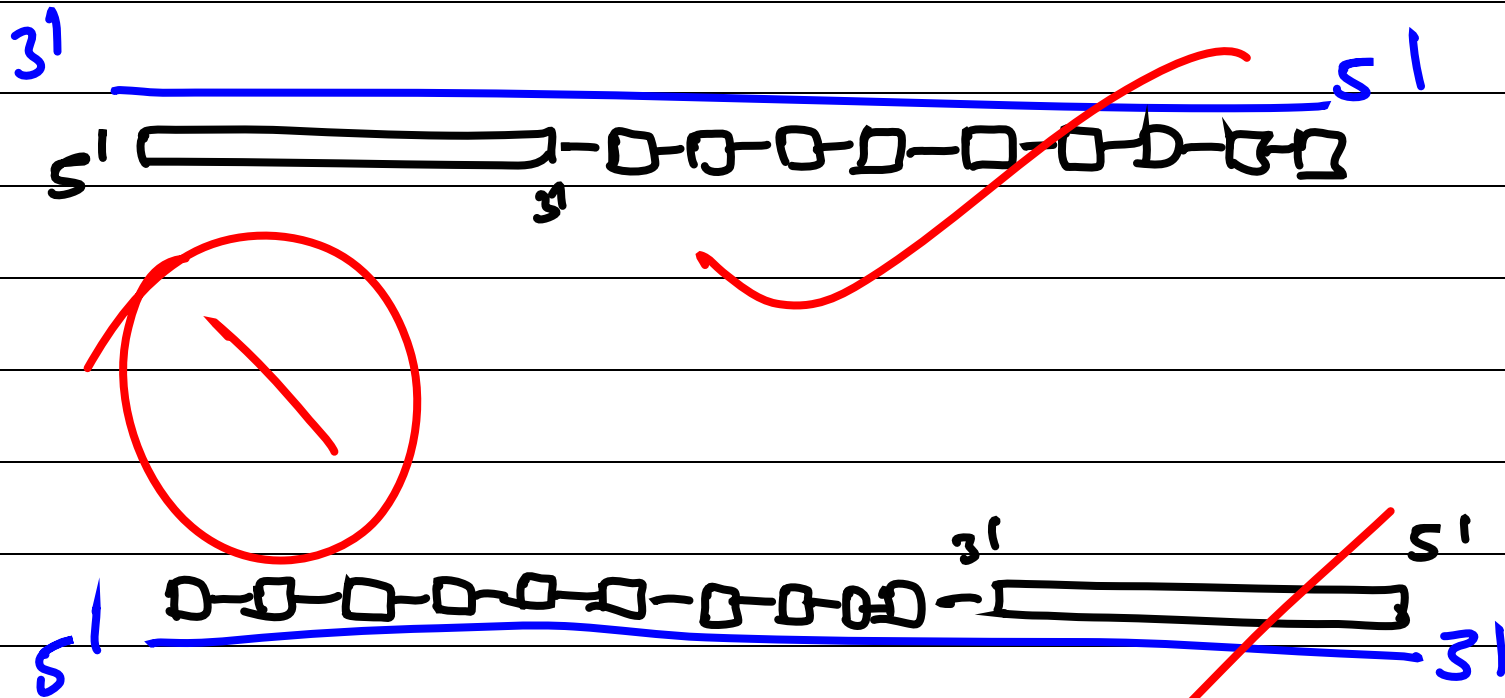
Due to denaturation the hydrogen bonds are breakdown.

→ Annealing - (Means hybridization)
 In annealing in the low temperature the new DNA strands are attach on the 3' primer.



→ Extension -

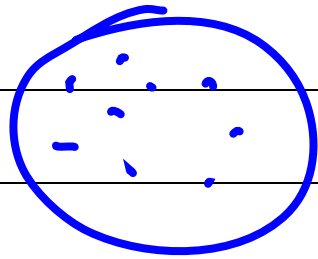
In extension the new DNA strands are completed.



In this the two new DNA strands are formed.

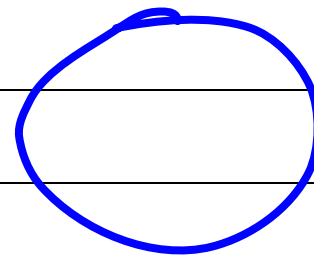
Ans 53 Co-dominance :-

eg. Hair color of Rhon



Black

(BB)



Grey

(bb)

F_1 →

	b	b
B	Bb	Bb
B	Bb	Bb

- In this all the characters are dominant in F_1 generation & the color of hair is black - grey.

- When we mating pure black & grey color ~~there~~ the color which come is black - grey color.

$F_2 \rightarrow$

	B	b
B	BB	Bb
b	Bb	bb

BB : Bb : Bb : bb

1 : 2 : 1

- In this f_2 generation there is also a recessive form.

- The phenotypic ratio is 1:2:1

- It is shown that in co-dominance there is both characters are shown dominant or recessive.

Section - B

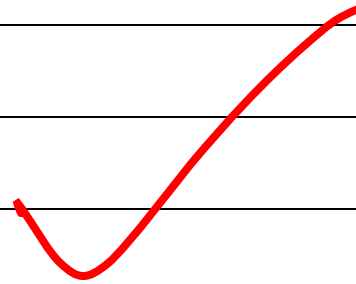
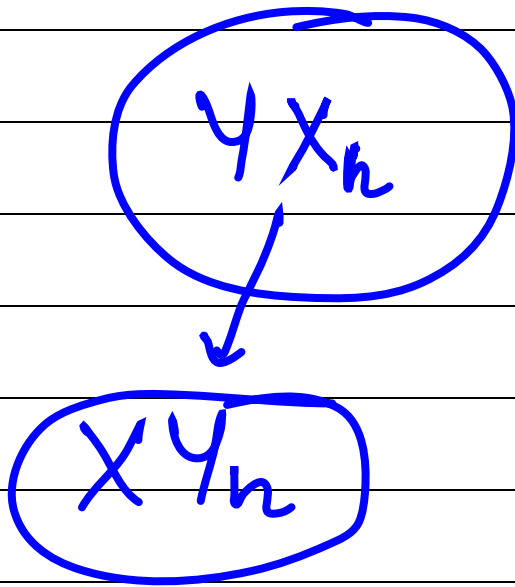
Ans 6 → Criminal Syndrome -

- The super male is called as criminal syndrome - ✓
- Because they have high masculine power.
- And they have low Id level.
- So, they show their power to doing crimes.

- They have XYY males.
- In this there are one extra chromosomes in their body.
- They have chromosomal disorders.
- They have sex-linked disorders.
- They are looking like female but due to one extra sex-linked characters they show the male characters.

Ans 8 → A person whose mother was haemophilic marriage a woman whose father was haemophilic.

Frequency of haemophilic son -



Man

Woman

 $X^h Y$ $X^h X$

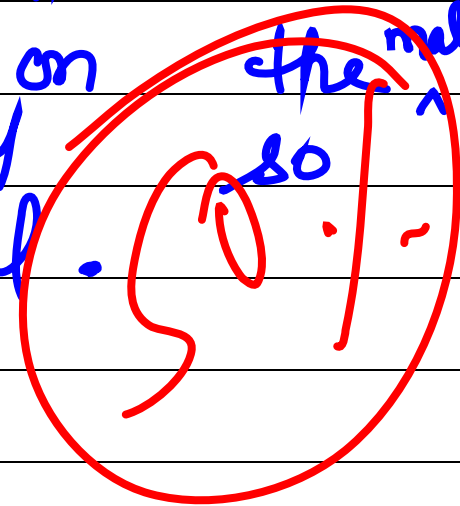
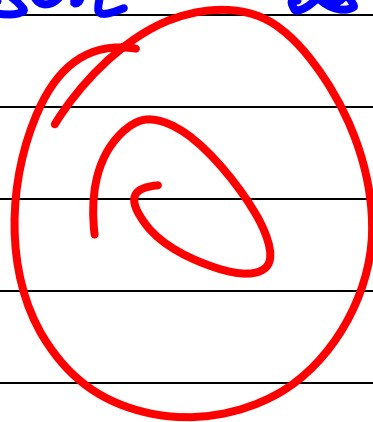
	X^h	Y
X	$X^h X^h$	$X^h Y$
X	$X^h X^h$	$X^h Y$

 $X^h X^h$ $X^h Y$

Girls (Carrier)

Boy (Normal)

• In this case the father was haemophilic & the mother was normal and when we mating them we see that their son was normal because the haemophilic character is present on the ^{male} character not on Y so that the son is normal.



Section - C

Ans 9: Application of genetic engineering -

• Genetic engineering is the change which is present in plants, animals & human beings.

• In genetic engineering we improved the situation & modified them.

→ Application of genetic engineering have four types -

1. Application in Agriculture
2. Application in Medicine
3. Energy Production
4. Application in Industries

1. Application in Agriculture -

- In agriculture recombinant DNA technology is used to improved the varieties, make the varieties resistant free, rich in protein, high yielding & less consuming fertilizers.

- They make the plants well developed & plants grow rapidly.

2. Application in Medicine -

- Recombinant DNA technology is used in the manufacture of medicine by the help of tissue and organism.

- It is very helpful method to produce drugs, vaccines and hormones which is useful for our body.

→ Vaccines :-

used to Recombinant DNA technology make the vaccines.

• Vaccines are protect our immune system to produce the antibodies which cover our body & protect them from disease causing agents.

• Vaccines are very helpful & useful for our body.

• It protect our body & not cause any disease.

→ Hormones :-

- Hormones are most important for our body.
- Recombinant DNA technology used to make the hormones.
- Hormones are the insulin which is extracted from the pancreas of cows & pigs.
- It is very difficult & costly method & it is extracted in limited quantity because in large quantity

it effect the diabaetic patient &
cause the allergic reactions in
their body.

→ Lymphokine -

in our body & it protect our
body.
eg. Interferon

- Interferon protects the body from
AIDS, common cold, huys etc.

3. Energy Production -

In this the Recombinant DNA technology is used in appropriate manner.

It is used in the biochemical to produce the fuels, bioenergies & some other products.

4. Application in industries -

In Industries Recombinant DNA technology is used in very high price.

- It produce the oils & produce chemical fertilizers.



Ans 11-3 Genetic Disorders

Genetic disorders are those in which there is a mutation or deletion of gene or abnormality of body.

They are of two types -

- Autosomal Disorders
- Allosomal Disorders

Autosomal Disorders -

Autosomal disorders are those which is present on

autosomes.

- Autosomes are 22 in pair
- They are of two types

→ Autosomal Dominant -

In this they are represent the dominant character. When one parent is diseased then the children are also caused by this disease in this only dominant character are shown.

→ Autosomal Recessive ✓

In this both the parents have defected & then the child are also defected with the abnormality.

In this recessive characters are shown.

Autosomal Disorders are —

1. Down Syndrome
2. Patau Syndrome
3. Edward Syndrome

1. Down Syndrome :- (Trisomy 21)

• It is present in the trisomy 21.

• They have 47 chromosomes.

• $2n + 1$

• One chromosome are extra in the 21st pair of chromosomes.

• Mentally Retarded

• Continue Salivation

- Infertile
- life span is much shorter.

2. Down Syndrome :- (Trisomy 21)

- Extra chromosome present in 21th pair of chromosomes.
- Infertile
- 1:5000 live births.
- Mentally Retarded

- life span is short
- eyes & Anucleation are much effective.

3. Edwards Syndrome 8^- (Trisomy 13)

- 1: 10,000 live births
- One extra chromosome present in 13th pair of chromosome.

Allosomal Disorders

Sex-linked Chromosomes

(i) Klinefelter Syndrome Chromosome

(XXY)

- They have males but show female characters.
- Breast enlargement
- They show all feminine characters

② Turner Syndrome :- ~~AKA~~ (XO)

- It is not mentally retarded.
- They have best Id level.
- In this the XO characters are show the female but at the time of puberty they immatured & sterile.

③ Super male :- (XY^Y)

- They have criminal syndrome.
- It have high masculine power.

~~Sign~~

③

