



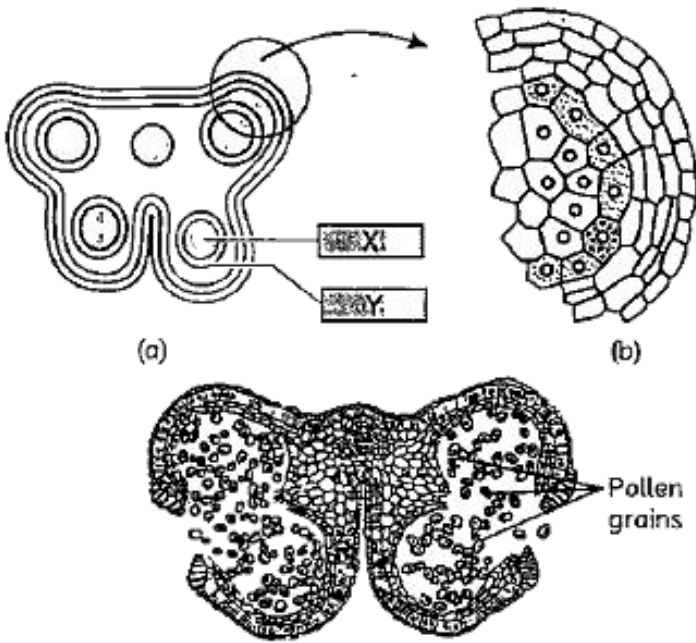
# **BIOLOGY**

## **BOOKS - EDUCART PUBLICATION**

### **SAMPLE PAPER 8**

**Section A**

1. Identify X and Y in the given figure.



A. X = Sporogenous Tissue, Y = Epidermis

B. X = Sporogenous Tissue, Y = Tapetum

C. X = Epidermis, Y = Tapetum

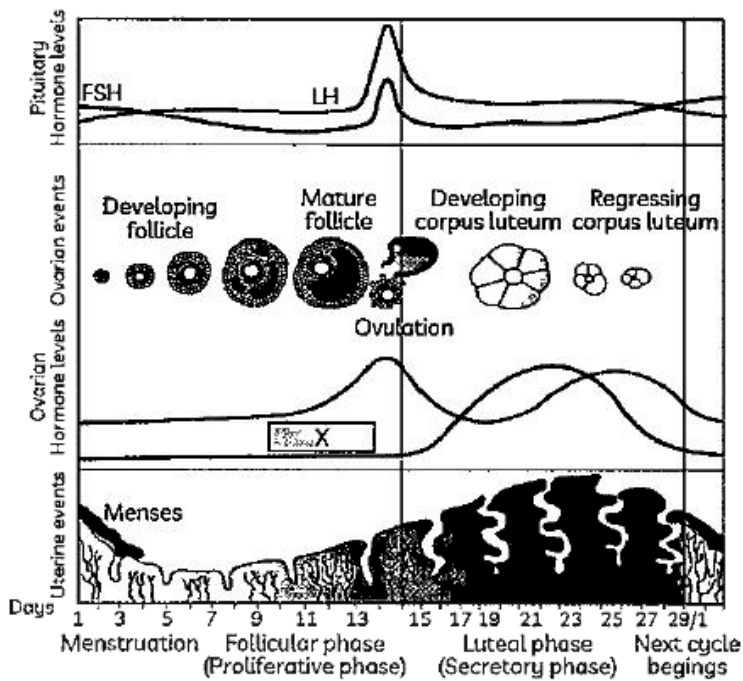
D. X = Tapetum, Y = Sporogenous Tissue

Answer: D



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2. Identify X:



A. X = Progesterone

B. X = Luteinising hormone

C. X = Estrogen

D. X = Oxytocin

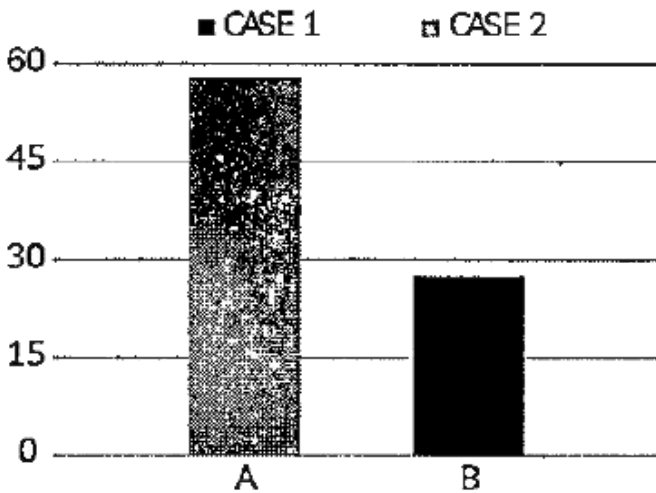
**Answer: A**



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3. The figure shows a graph where A represents adenylate residues and B represents Methyl guanosine triphosphate

molecules. Which of these cases will undergo immediate Capping and which one will undergo Tailing?



- A. Case 1: Capping, Case 2: Tailing
- B. Case 1: Tailing, Case 2: Capping
- C. Case 1 and Case 2 Capping
- D. Case 1 and Case 2 Tailing

**Answer: A**



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**4. Find out the correctly matched option:**

、  
(##AGP\_EDG\_BIO\_XII\_T1\_SQP\_08\_E01\_004\_Q01.png"

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A. A

B. B

C. C

D. D

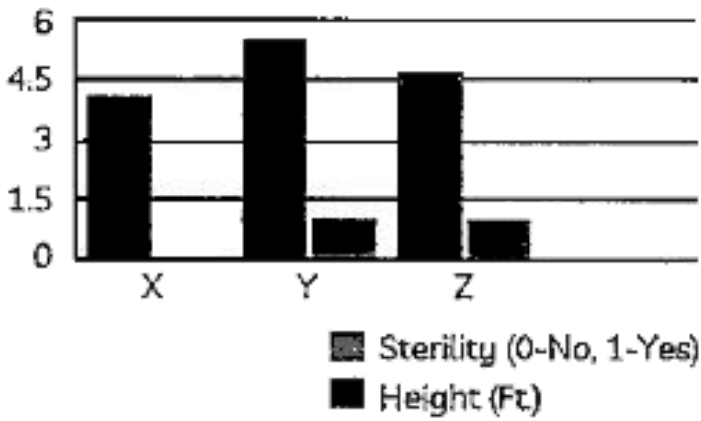
**Answer: A**



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5. Observe the given graph and identify the individual suffering from Down's syndrome

Characteristics of Individuals Suffering from various chromosomal Disorders



A. X

B. Y

C. Z

D. All of them

**Answer: A**



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6. After reaching the ovary, pollen tube enters the ovule by which of the following routes:

- A. Either through micropylar end (porogamy)
- B. Or through chalazal end (chalazogamy)
- C. Or through funicle or integument (mesogamy)

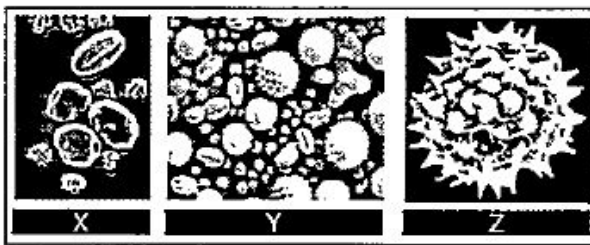
D. Observe the given diagram and the table. Identify the correct option

**Answer: D**



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7. Observe the given diagram and the table. Identify the correct option



	X	Y	Z
(A)	Ovum	Ovum	Pollen Grain
(B)	Pollen Grain	Ovum	Pollen Grain
(C)	Pollen Grain	Pollen Grain	Pollen Grain
(D)	Pollen Grain	Pollen Grain	Ovum

A. A

B. B

C. C

D. D

**Answer: C**





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**8.** Post meiosis, how many megaspores formed from the megaspore mother cell degenerate:

A. 4

B. 3

C. 2

D. 1

**Answer: B**



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9. Geitonogamy is functionally similar to X = .....

.... Whereas it is genetically similar to Y = .....

A. X = Autogamy, Y = Cross pollination

B. X = Cross pollination, Y = Autogamy

C. X=Xenogamy, Y = Autogamy at:

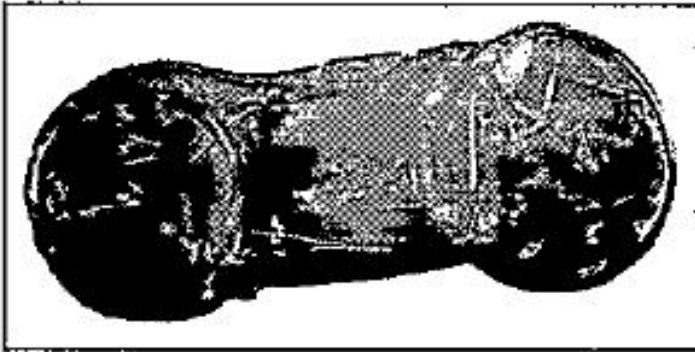
D. X = Autogamy, Y = Autogamy

**Answer: B**



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10. Which of the following statements are true related to X?



- (I) X is a female contraceptive
- (II) X is a male contraceptive
- (III) X permanently stops conception
- (IV) X can interfere with the menstrual cycle

A. (i)

B. (iii),(iv)

C. (ii),(iii),(iv)

D. (i),(ii)

**Answer: A**



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**11.** Development of embryo sac from a single functional megaspore is termed as:

A. Disporic development

B. Monosporic development

C. Trisporic development

D. Quadsporic development

**Answer: B**



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**12.** Colostrum consumption leads to the development of which type of immunity in the child:



A. Active

B. Passive

C. Both (a) and (b)

D. Neither (a) nor (b)

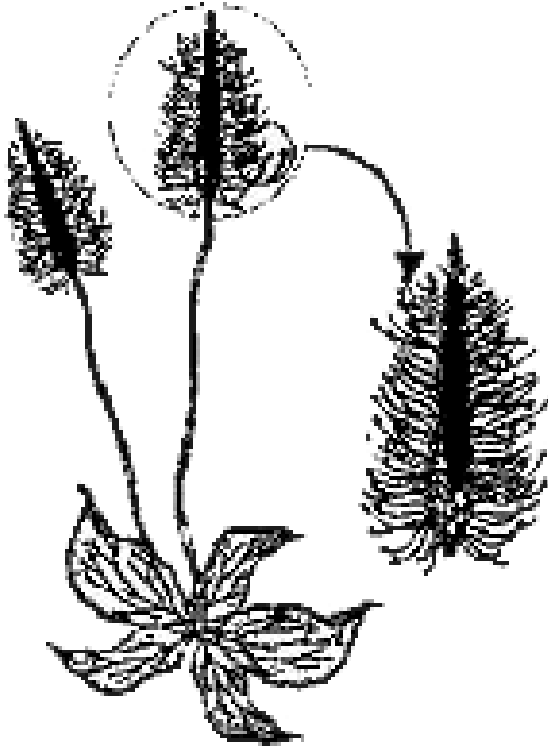
**Answer: B**



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**13.** Observe the given diagram. Predict the kind of pollination that might be happening in this

plant.



A. Wind

B. Water

C. Insect

D. None of these

**Answer: A**



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**14.** Arrange the following steps in correct order: (LAC OPERON-SWITCHING ON):

(I) RNA polymerase accesses the promoter and the transcription then proceeds further and lac mRNA is formed.

(II) The presence of the inducer such as lac

tose or allolactose, inactivates the repressor.

(III) The operon is switched on.

(IV) if lactose is provided in the growth medium of the bacteria, then the lactose gets transported into the cells by the action of the enzyme permease.

A. (I), (II), (III), (IV) (b) (IV)

B. (IV),(I),(II),(III)

C. (III),(II),(I),(IV)

D. (II),(IV),(I),(III)

**Answer: B**



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15. Which of the following is not a limitation of

A.RTS:

A. These techniques are available in limited

centers as they require extremely high

precision handling by specialised profes

sionals and expensive instrumentation.

B. As the techniques are very costly so their

benefits are affordable to only a limited

number of people.

C. Certain emotional religious and social factors also discourage the use of these methods.

D. These techniques proved 100 percent positive outcomes.

**Answer: D**



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**16.** The sex-determination mechanisms based on female heterogamety are:

- A. ZZ-ZW type
- B. ZZ-ZO type
- C. Both (a) and (b)
- D. Neither (a) nor (b)

**Answer: C**



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17. Which among these contraceptive devices promotes cervix hostility?

A. Saheli

B. Progestasert

C. Condoms

D. All of these

**Answer: B**



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**18.** The translation process involves the following steps:

(I) After another generation (.e. after 40 minutes), it was found that the DNA extracted from the culture was composed of equal amounts of this hybrid DNA and of 'light' DNA.

(II) In 1958, Taylor and colleagues conducted similar experiments on *Vicia faba* (faba beans) by using radioactive thymidine to detect distribution of newly synthesised DNA in the chromosomes.

(III) They also concluded that the DNA

in chromosomes also replicates semiconservatively.

(IV) After one generation of transfer (Le., after 20 minutes, *E. coli* divides in 20 minutes) from  $^{15}\text{N}$  to  $^{14}\text{N}$  medium, the DNA that was extracted from the culture was found to have a hybrid or intermediate density.

Choose the correct sequence:

A. (I),(II),(IV),(III)

B. (III),(IV),(II),(I)

C. (I),(II),(III),(IV)

D. (IV),(I),(II),(III)

**Answer: D**



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**19.** Who suggested that the two strands of DNA separate and each strand acts as a template for the synthesis of new complementary strands?

A. Watson and Crick

B. Hershey and Chase

C. Griffith

D. Mendel

**Answer: A**



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**20.** Transcription is defined as the process of copying genetic information from one strand of the:

- A. RNA to DNA
- B. DNA to RNA
- C. mRNA to DNA
- D. All of these

**Answer: B**



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**21.** The polarity of the coding strand during transcription is:

A. 3-5'

B. 5-3'

C. Con adhere to any polarity

D. 6-5'

**Answer: B**



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**22.** Which type of antibodies are present in colostrum?

A. IgK

B. IgG

C. IgM

D. IgA

**Answer: D**



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**23.** The number of codons for 20 amino acids are:

A. 62

B. 61

C. 63

D. 64

**Answer: B**



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**24.** A typical nucleosome in a DNA helix contains:



A. 290 bp

B. 200 bp

C. 300 bp

D. 400 bp

**Answer: B**



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**Section B**

1. Assertion (A): The coconut water from tender coconut is free nuclear endosperm and the surrounding white kernel in coconut is the cellular endosperm.

Reason (R): Primary endosperm nucleus (PEN) undergoes successive nuclear divisions to produce free nuclei.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: A**



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2. Assertion (A): One of the examples of an albuminous seed is Maize.

Reason (B): Endosperm gets completely consumed in the maize seed.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**



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3. Assertion (A): Germ pores are the regions where intine comes out to form a pollen tube after pollination.

Reason (B): Germ pores are prominent apertures of pollen grains where exine is thin or absent.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: B**



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4. Assertion (A): Providing a safe place to lay eggs is a floral reward in many species.

Reason (B): The egg laying organisms provide

the plant with nutrients in exchange of the place.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

**Answer: C**



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5. In Agamospermy, in some species, without undergoing reduction division, an egg cell is formed. The ploidy of that egg cell is:

A. Haploid

B. Diploid

C. Triploid

D. Polyploid

**Answer: B**



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6. Black pepper and beet have the remnants of:

- A. Nucellus
- B. Middle layers
- C. Sporopollenin
- D. None of these

**Answer: A**



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7. Chromosomal theory of sex determination was proposed by:

A. EB Wilson and Stevens

B. Henking

C. McClung

D. Mendel

**Answer: A**



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8. After fertilization antipodals and synergids:

A. Persist

B. Degenerate

C. Change into reproductive structures

D. Provide nutrition

**Answer: B**



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9. Which of the following statements are true related to the given figure?



(I) Its consumption has been claimed to increase the performance of athletes and race horses

(II) It's a scientifically proven and recommended drug.

(III) They have become aggressively popular in

the western countries.

(IV) They can act as natural contraceptives.

A. (I),(III)

B. (II),(IV)

C. (II),(III)

D. (I),(III),(IV)

**Answer: A**



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10. Percentage of the pea plants which would be homozygous recessive in  $F_1$  generation when tall  $F_1$  heterozygous pea plants are selfed will be:

A. 0.25

B. 0.5

C. 1

D. 0.75

**Answer: A**



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11. .... identified DNA as an acidic substance present in the nucleus of a cell

A. Friedrich Meischer

B. Temin

C. Watson

D. William Harvey

**Answer: D**



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12. A testis is covered by a dense covering called:

A. Tunica albuginea

B. Endothecium

C. Scrotal layers

D. Glans penis

**Answer: A**



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13. The seminiferous tubules open into X = ..... through Y=

- A. X = Vasa efferentia, Y = Rete testis
- B. X = Rete testis , Y = Vasa efferentia
- C. X = Rete testis , Y = Epididymis
- D. X = Epididymis , Y = Vasa efferentia

**Answer: A**



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**14.** Many copies of the extracted DNA can be made with the help of a technique called:

A. PCR

B. ELISA

C. MRI

D. Gel Electrophoresis

**Answer: A**



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15. During genome sequencing, it was found that the total genome that codes for proteins is roughly

A. 0.04

B. 0.02

C. 3,5%

D. 0.1

**Answer: B**



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**16.** Which among these is not a goal of the human genome project:

A. Identification of all 20,000-25,000 genes approximately present in human DNA.

B. Determination of the sequences of 3 billion chemical base pairs that constitutes the human DNA.

C. To address the Ethical, Legal, and Social Issues (ELSI) that may arise from the

project.

D. Putting up the isolated DNA samples from all the humans in DNA banks.

**Answer: D**



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**17. Identify the incorrect statement:**

A. According to central dogma in molecular biology, the flow of genetic information

is unidirectional from DNA to RNA (transcription).

B. The central dogma of molecular biology was given by Temin and Baltimore.

C. Ribonucleic acid (RNA) was the first genetic material that was discovered.

D. It was discovered through several researches that the essential life processes such as metabolism,

translation, splicing, etc., evolved around  
RNA.

**Answer: B**



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**18.** Urethral meatus refers to the:

A. Urinogenital duct

B. Opening of vas deferens into urethra

C. External opening of the urinogenital duct

D. Muscles surrounding the urinogenital duct

**Answer: C**



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**19.** Polygenic Inheritance is a phenomenon in which traits are controlled by:



A. One gene

B. Two genes

C. Three or more genes

D. Three of less genes

**Answer: C**



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**20.** Gamete disseminated by the whom determines whether the child produced will be male or female in Homo sapiens:

A. Male

B. Female

C. Both of them

D. None of them can determine

**Answer: D**



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**21. Which one of them is incorrect:**

A. Human males are heterogametic

B. Human males are homoogametic

C. Out of the total sperms produced, 50 percent carry the X-chromosome and the rest 50 percent has Y-chromosome besides the autosomes (male digamety).

D. Humans produce two types of gametes during spermatogenesis.

**Answer: B**



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22. Promoter is a part of transcription unit which does not help:

A. in initiation of transcription process

B. as a binding site for RNA polymerase.

C. transferring the activated amino acids to the mRNA ribosome for protein synthesis.

D. Both (a) and (b)

**Answer: C**





**23.** If the two RNA molecules are produced simultaneously, their sequences would be ..... to each other and this will result in formation of a double-stranded RNA

- A. Incompatible
- B. Parallel
- C. Complementary
- D. Can't determine

**Answer: C**



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**24. Based on the given graph, predict X and Y:**

<b>Nitrogenous base + Pentose sugar</b>	<b>Nucleoside</b>
<b>Adenine + Ribose sugar</b>	<b>Adenosine</b>
<b>Adenine + Deoxyribose sugar</b>	<b>X</b>
<b>Guanine + Ribose sugar</b>	
<b>Guanine + Deoxyribose sugar</b>	<b>Deoxyguanosine</b>
<b>Cytosine + Ribose sugar</b>	<b>Y</b>
<b>Cytosine + Deoxyribose sugar</b>	
<b>Uracil + Ribose sugar</b>	<b>Uridine</b>
<b>Thymine + Deoxyribose sugar</b>	

	X	Y
(a)	Uridine	Deoxyadenosine
(b)	Guanosine	Uridine

(c)	Cytidine	Deoxyguanosine
(d)	Deoxyadenosine	Cytidine



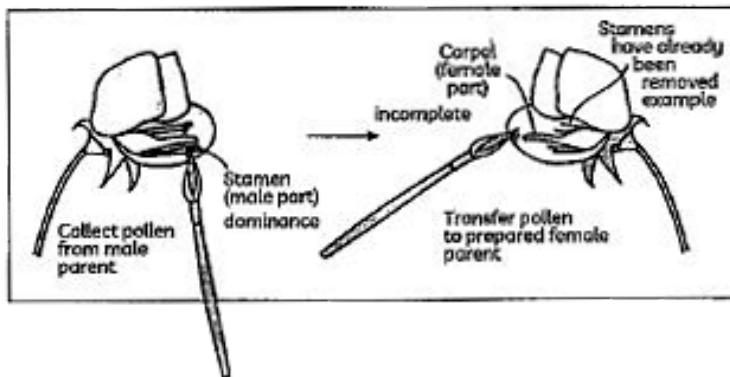
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## Section C

1. A researcher at XYZ institute of genetic research, employed at the botany department, performed an experiment by crossing pure red flowered plant with pure white flowered plants. He expected all red flowered plants in  $F_1$  but was surprised on seeing that all  $F_2$

hybrids had pink coloured flowers. On selfing of  $F_1$ , flowers of all 3 colours (red, pink and white) were obtained in  $F_2$

Based on his work, he was given a questionnaire by his guide. Help him in providing accurate answers.



The diverse genotypes obtained in  $F_2$  generation will be:



A. RR, Rr

B. RR,rr

C. all rr

D. RR,Rr,rr

**Answer: D**

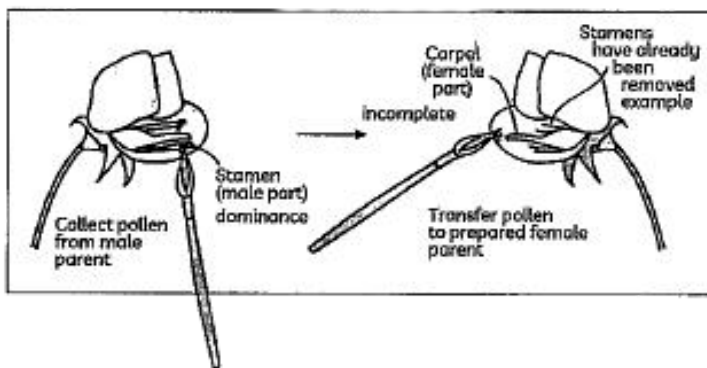


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2. A researcher at XYZ institute of genetic research, employed at the botany department, performed an experiment by crossing pure red

flowered plant with pure white flowered plants. He expected all red flowered plants in  $F_1$  but was surprised on seeing that all  $F_2$  hybrids had pink coloured flowers. On selfing of  $F_1$ , flowers of all 3 colours (red, pink and white) were obtained in  $F_2$

Based on his work, he was given a questionnaire by his guide. Help him in providing accurate answers.



This condition that forms the basic principle of this cross also happens in:

- A. Coat colour in cattle
- B. Eye colour in fruit fly
- C. Flower colour in *Antirrhinum majus*
- D. Both (a) and (b)

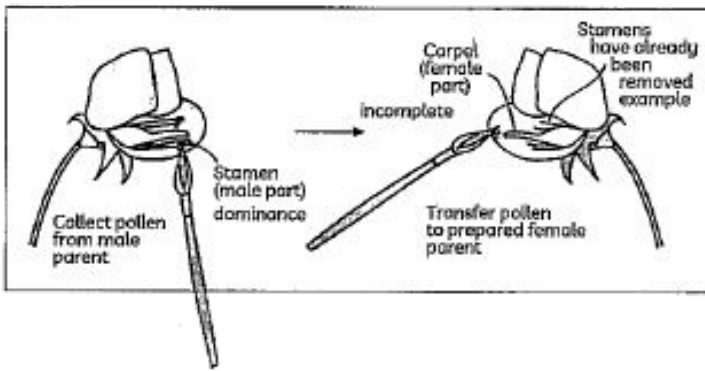
**Answer: C**



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3. A researcher at XYZ institute of genetic research, employed at the botany department, performed an experiment by crossing pure red flowered plant with pure white flowered plants. He expected all red flowered plants in  $F_1$  but was surprised on seeing that all  $F_2$  hybrids had pink coloured flowers. On selfing of  $F_1$ , flowers of all 3 colours (red, pink and white) were obtained in  $F_2$

Based on his work, he was given a questionnaire by his guide. Help him in providing accurate answers.



Which of the following disease runs in the ts  
in family of British queen?

- A. Phenylketonuria
- B. Haemophilia
- C. Huntington's disease
- D. Down's syndrome

**Answer: B**

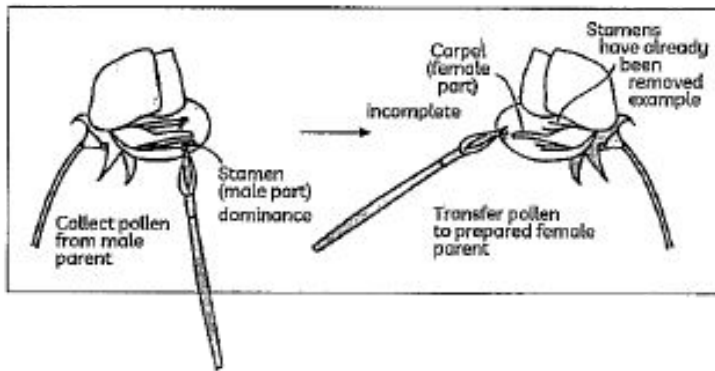


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Based on his work, he was given a

questionnaire by his guide.Help him in providing accurate answers.



The underlying principle in these crosses is:

- A. Incomplete dominance
- B. Co-dominance
- C. Pleiotropy
- D. All of these.

**Answer: A**



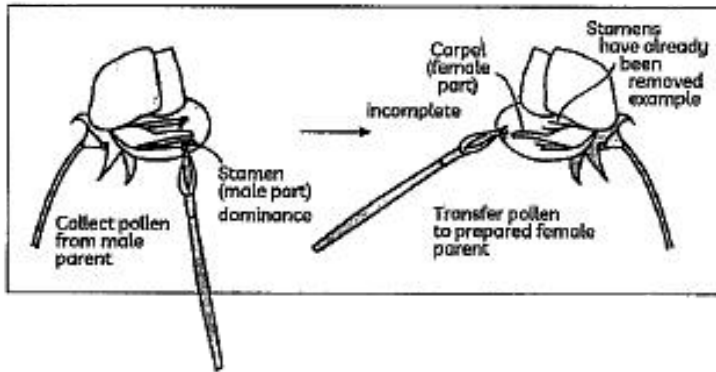
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5. A researcher at XYZ institute of genetic research, employed at the botany department, performed an experiment by crossing pure red flowered plant with pure white flowered plants. He expected all red flowered plants in  $F_1$  but was surprised on seeing that all  $F_2$  hybrids had pink coloured flowers. On selfing of  $F_1$ , flowers of all 3 colours (red, pink and



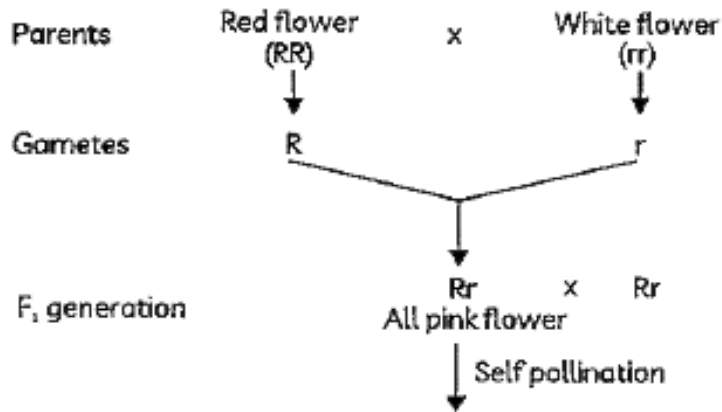
white) were obtained in  $F_2$

Based on his work, he was given a questionnaire by his guide. Help him in providing accurate answers.



What will be the genotypic ratio in the

following cross:



Gametes



F<sub>2</sub> generation

♀ \ ♂	R	r
R	RR red	Rr pink
r	Rr pink	rr white

Phenotypic ratio = Red : Pink : white  
1 : 2 : 1

Genotypic ratio = RR : Rr : rr  
          ?

A. 1:4:1

B. 1:2:2

C. 1:2:1

D. 1 : 3 : 1

**Answer: C**

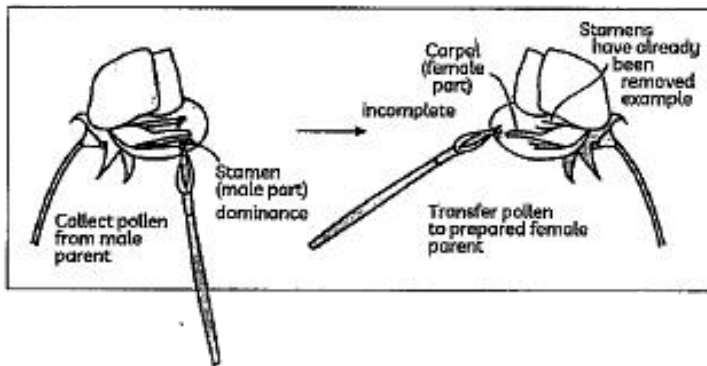


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6. A researcher at XYZ institute of genetic research, employed at the botany department, performed an experiment by crossing pure red flowered plant with pure white flowered plants. He expected all red flowered plants in  $F_1$  but was surprised on seeing that all  $F_2$

hybrids had pink coloured flowers. On selfing of  $F_1$ , flowers of all 3 colours (red, pink and white) were obtained in  $F_2$

Based on his work, he was given a questionnaire by his guide. Help him in providing accurate answers.



The inheritance of human skin colour is an example of

A. Incomplete dominance

B. Co-dominance

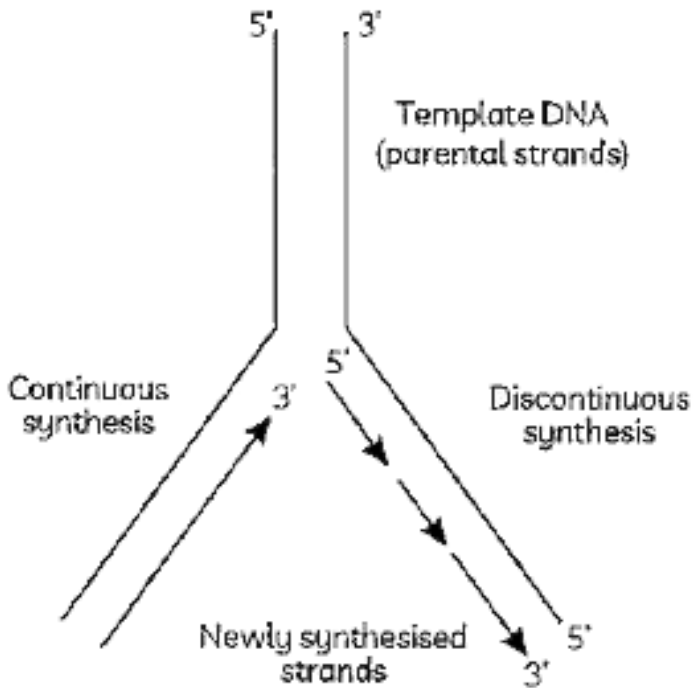
C. Pleiotropy

D. All of these

**Answer: D**



**View Text Solution**



7.

The discontinuous strands in the given figure are later joined by:

A. DNA polymerase

B. RNA polymerase

C. mRNA synthetase

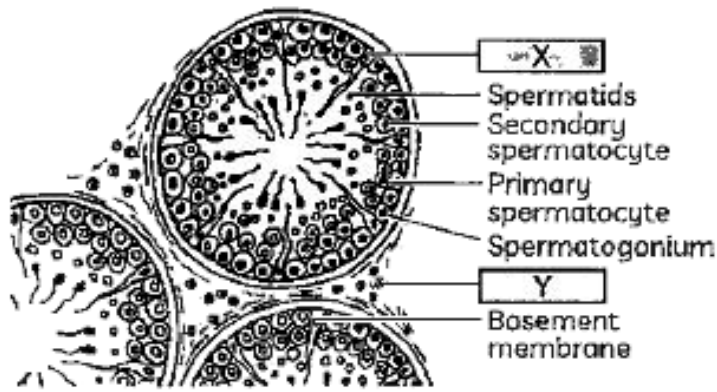
D. DNA Ligase

**Answer: B**



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**8. Observe the given diagram and find out the correct statement:**



*Diagrammatic view of Seminiferous tubules*

(I) X are Sertoli cells

(II) Y are Leydig cells

(III) X provides nutrition to spermatocytes

(IV) Y provides nutrition to spermatocytes

A. (I),(II)

B. (I),(III)



C. (III)

D. (III),(IV)

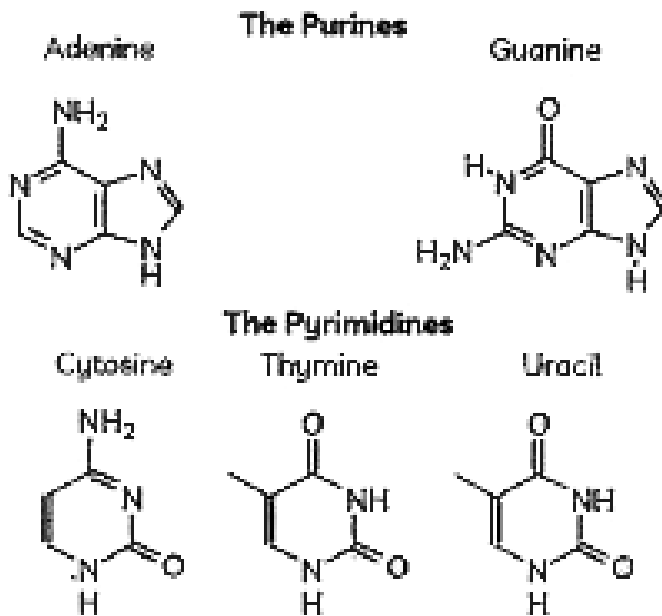
**Answer: B**



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9. Purines (Adenine and Guanine) and Pyrimidines (Cytosine and Thymine) are present in DNA in an equal ratio. Also, Purines and Pyrimidines are complementary in a polynucleotide chain. It means that the

number of Adenine molecules should be equal to the number of Thymine molecules and the number of Guanine molecules should be equal to the number of Cytosine molecules.



In a given strands of DNA, the base sequence is AGTCATGAT. What will be the basic sequence of its complementary strand.

A. AGTCATGCT

B. AGTCATGAT

C. TCAGTACTA

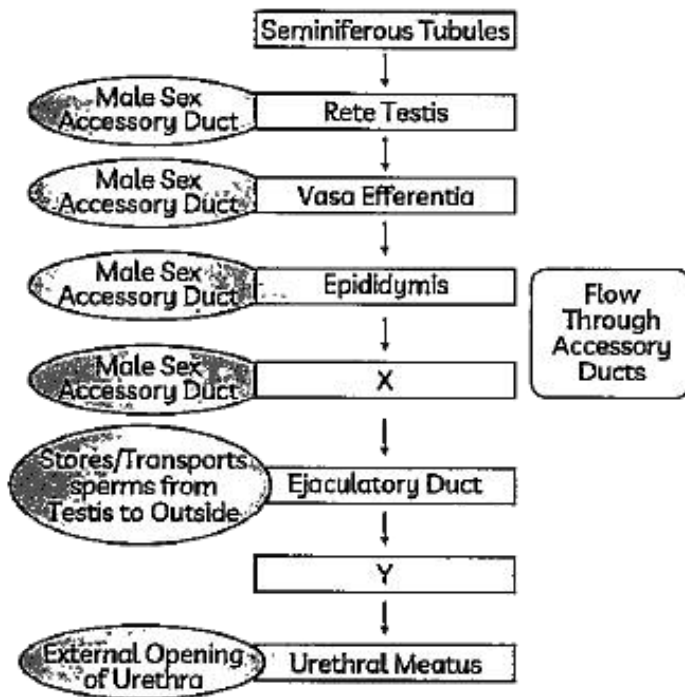
D. AGTGATGAT

**Answer: C**



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**10.** Observe the diagram given below and answer the question that follows:



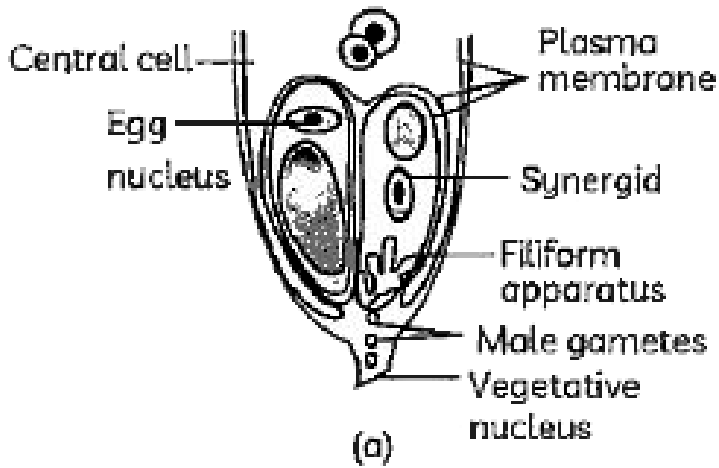
Identify X and Y:

- A. X = Urethra, Y= Vas deferens
- B. X= Vas deferens, Y = Urethra
- C. X = Vas deferens, Y = Glans penis
- D. X = Glans penis, Y = Vas deferens

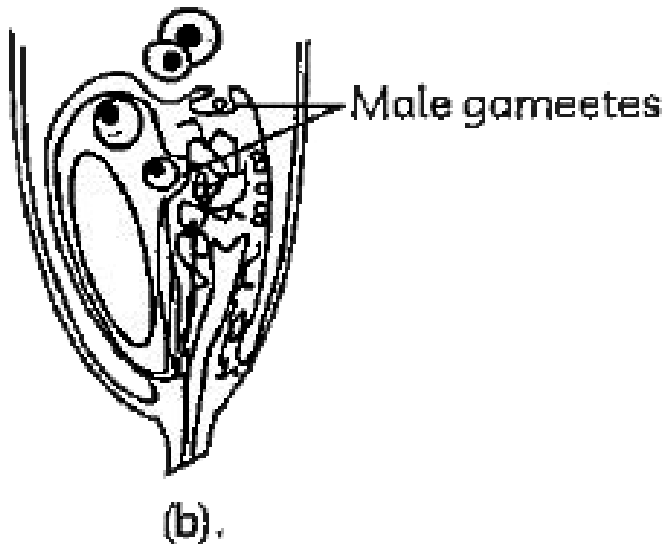
**Answer: B**



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11.



The figure (a) and (b) are depicting:

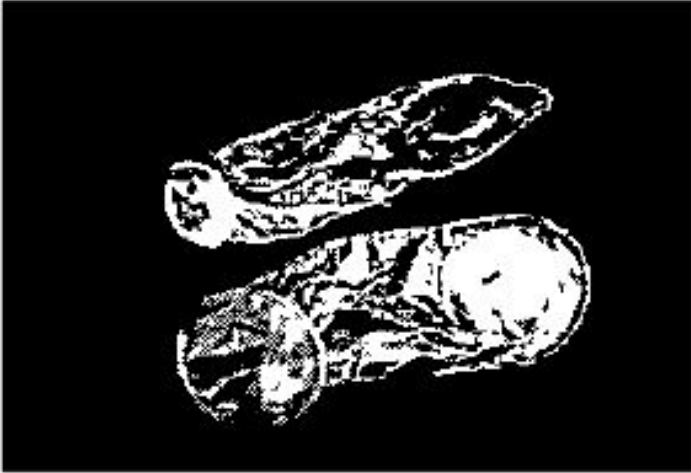
- A. Entry of pollen tube into filiform apparatus
- B. Fertilisation of germ cells and zygote formation
- C. Entry of pollen tube into synergids
- D. Entry of pollen tube and the discharge of male gametes into synergids

**Answer: D**



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12. The given contraceptives can be used by:



A. Men

B. Women

C. Men and Women

D. The one on the top can be used by men

while the one at the bottom can be used



by females.

**Answer: D**



**Watch Video Solution**