

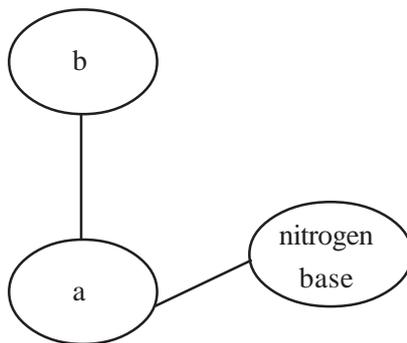
Unit - 7

How we became what we are

PART - A

**Qn: 7.1**

Complete the given illustration of a nucleotide molecule.



Time - 1 min  
Score - 1

PART - B

**Qn: 7:2**

Using the given indications, illustrate the DNA nucleotide molecule and RNA nucleotide molecule.

 Guanine	 Cytosine	 Adenine	 Thymine
 Deoxyribose Sugar molecule	 Phosphate molecule	 Uracil	 Ribose Sugar molecule

Time - 4 min  
Score - 2

**Qn: 7:3**

Prepare two arguments, for and against, related to genetic engineering for a debate to be conducted on "The branch of science that is drastically transforming the living world."

Time - 4 min  
Score - 2

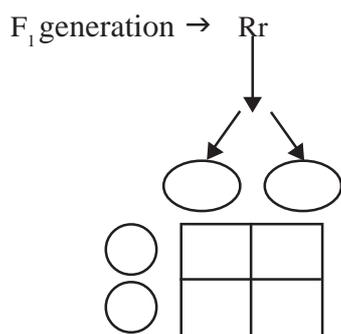
## PART - C

### Qn: 7:4

Given below is the illustration of a cross conducted between red flowered and white flowered pea plants. Complete it suitably.

Red flower - Dominant character  
White flower - Recessive character

a)



b) Write down the ratio of pea plants with different characters in the F<sub>2</sub> generation.

Time - 4 min

Score - 3

### Qn: 7:5

Ligase is referred as molecular glue and Restriction endonuclease as molecular scissors. If these are utilized, great many achievements can be produced in the fields of agriculture and medicine.

a) Which is the technology indicated above?

b) What is the use of ligase and endonuclease in this technology?

Time - 2 min

Score - 3

### Qn: 7:6

When a woman gave birth to girl children in 3 consecutive deliveries, her husband and his relatives blamed her.

a) Evaluate this social situation and write your opinion.

b) Illustrate the possibility of the formation of the male and the female child, based on sex determining chromosomes.

Time - 2½ min

Score - 3

**Qn: 7:7**

Complete the table below including the common knowledge statements in suitable columns.

- Loss of one sex chromosome
- One extra autosome
- Low immunity
- Anaemia
- Mental retardation
- Dwarfness

<b>Down Syndrome</b>	.....
•	•
•	• femininity
•	•

Time - 3 min  
Score - 3

**Qn: 7:8**

Find out facts from the boxes and fill up the blanks in the table.

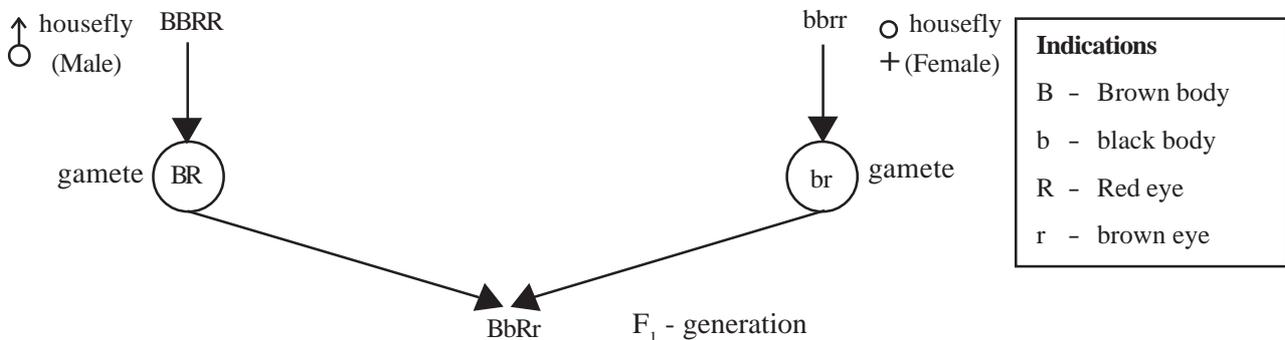
Characteristics	DNA	RNA
Number of Strands		
Type of Sugar molecule		
Nitrogen bases		

• Ribose Sugar • Two strands • Deoxyribose Sugar • One strand • Adenine, Cytosine, Uracil, Guanine, Thymine

Time - 4 min  
Score - 3

**Qn: 7:9**

A cross between organisms having two different characters is illustrated. Examine the illustration and answer the given questions:



- Which are the dominant characters in the F<sub>1</sub> generation?
- Which are the recessive characters in the F<sub>1</sub> generation?
- What characters are possible in the organisms of the next generation?

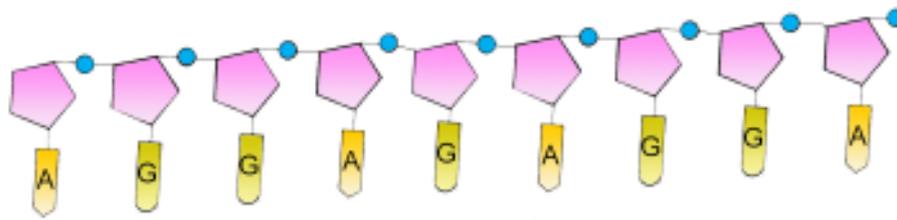
(Number of progeny is not to be found out)

3

Time - 2 min  
Score - 4

**Qn: 7 : 10**

Construct a complementary strand of DNA based on the pairing of nitrogen bases.

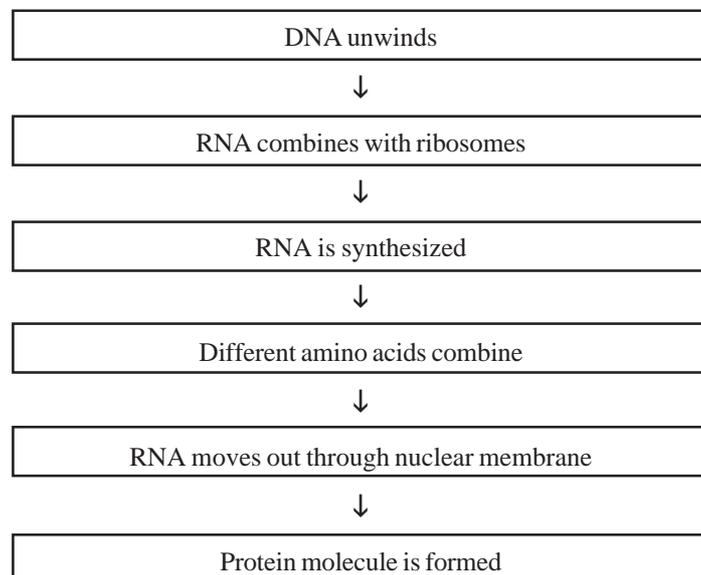


Time - 3 min

Score - 3

**Qn: 7 : 11**

Given is the flow chart showing gene action prepared by Anu. Correct, if there is any mistake.



Time - 4 min

Score - 3

**Qn: 7 : 12**

Construct a flow chart showing the various stages of protein synthesis from genes.

Time - 4 min

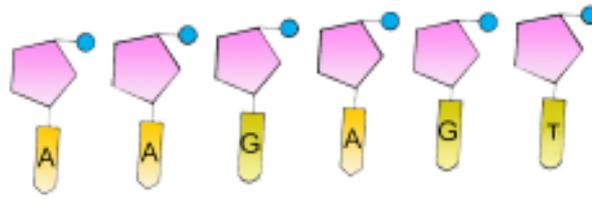
Score - 3

**Qn: 7 : 13**

Read the description below and answer the following questions.

DNA has two complementary strands formed of nitrogen base pairs. When such DNA unwinds to form RNA, the arrangement of RNA nucleotides is determined by the pairing of nitrogen bases in a complementary way. The only difference is that, instead of thymine (T) in DNA, it is Uracil (U) in RNA in RNA.

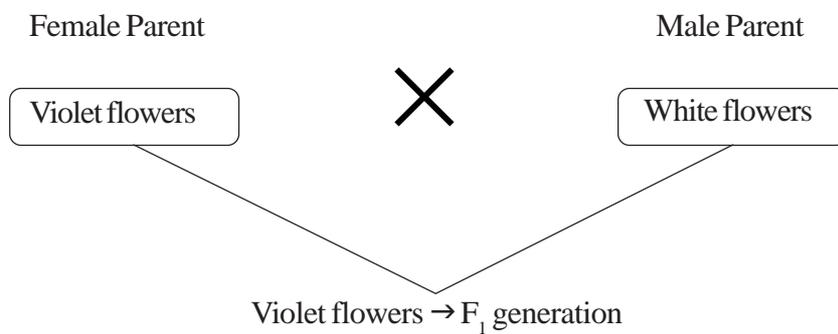
- Pair the four types of Nitrogen bases in DNA.
- Which is the nitrogen base seen in RNA that is complementary to the adenine in DNA?
- Draw the diagram of an RNA molecule including the nitrogen bases complementary to the DNA strand given in the picture



Time - 4 min  
Score - 3

**Qn: 7 : 14**

Scaria Pillai chettan is trying to develop new varieties of pea plants in his garden. Given below is the illustration of the experiment which he conducted. Observe this and answer the following questions.



- (a) Which law of heredity can be used to explain the cause of production of violet flowered plants in the F<sub>1</sub> generation?
- (b) Which are the dominant and recessive characters among these?
- (c) Which are the characters that appear in the F<sub>2</sub> generation if the plants in the F<sub>1</sub> generation are selfed? What will be the ratio ?

Time - 4 min  
Score - 3

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